

BET IN ELECTRICAL

**SOFTWARE ENGINEERING PEST MANAGEMENT SYSTEM
KEDAH PADDY FIELD**

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**Report Submitted to Fulfil the Partial Requirements
For the Bachelor of Engineering Technology (Hons.) in
Electrical
University Kuala Lumpur**

JANUARY 2020

DECLARATION

I declare that this report is my original work and all references have been cited adequately as required by the university.

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ABSTRACT

Pest management system was used to manage the usage of pesticides and monitor the effectiveness of some pest counter by refer event chart. Based on the appliances that already existed all this while, farmer only use pesticide to overcome pest. However, the consumption of pesticide is the main method that have been used and the effectiveness of it have been prove. But all this time the user or farmer only use pesticide without any regulation on using it. As pesticide can lead to unhealthy growth if it is overused. The goal of this project is to reduce utilization of pesticide which is hazardous to farmer by build a software system that are more reliable for farmer. And to reduce loss and damage that made by pest. The project has two section which is hardware and software, the hardware section will be the detection of pest by using a microwave radar motion sensor and radio-controlled signal to send to monitor. While Visual Studio was used to create the software for the management system. Besides, the system used an online database storage by using MySQL database and using online library that direct to the International Rice Research Institute (IRRI) website. Individual components were tested and verified to work properly. The software was able to display pest attack event by chart that summarized automatically from the table of event data that update by farmer. While the library automatically opened the IRRI website for farmer to study about some pest and the natural way to counter the pest attack. As a conclusion, project goal has been achieved, resulting the usage of pesticide can be reduced and controlled.

TABLE OF CONTENTS

| Contents | Page No. |
|---|-----------------|
| DECLARATION | ii |
| APPROVAL PAGE | iii |
| ACKNOWLEDGEMENT | iv |
| ABSTRACT | v |
| TABLE OF CONTENTS | vi |
| LIST OF FIGURES | ix |
| LIST OF TABLES | x |
| LIST OF ABBREVIATIONS | xi |
| | |
| CHAPTER 1: INTRODUCTION | |
| 1.1 Introduction | 1 |
| 1.2 Background of the project | 2 |
| 1.3 Problem statement | 2 |
| 1.4 Objective of the project | 3 |
| 1.5 Significance of the project | 3 |
| 1.6 Scope and limitations of the project | 4 |
| 1.7 Chapter Summary | 4 |

CHAPTER 2: LITERATURE REVIEW

| | | |
|------------|---|----------|
| 2.1 | Introduction | 5 |
| 2.2 | Definition of Pest | 5 |
| 2.3 | History of Pesticide | 6 |
| 2.4 | Pesticide on Farm Animals and Human Beings | 6 |
| 2.5 | Impact on farmer by using unsafe pesticide | 7 |
| 2.6 | Pest Control Device | 8 |
| 2.7 | Chapter Summary | 9 |

CHAPTER 3: METHODOLOGY

| | | |
|------------|--|-----------|
| 3.1 | Introduction | 10 |
| 3.2 | Block Diagram | 11 |
| 3.3 | Flow chart | 13 |
| 3.4 | Simulation Software | 15 |
| | 3.4.1 Visual Basic | 15 |
| | 3.4.2 SolidWorks | 15 |
| | 3.4.3 My SQL Workbench | 16 |
| | 3.4.4 Altium Designer | 16 |
| 3.5 | Plan layout | 17 |
| | 3.5.1 Hardware Design | 17 |
| | 3.5.2 Software Design | 18 |
| 3.6 | List of component/equipment | 19 |
| | 3.6.1 Microwave Radar Motion sensor | 18 |
| | 3.6.2 Transmitter | 20 |
| | 3.6.3 Receiver | 21 |
| | 3.6.4 Relay | 22 |

| | | |
|--|--|----|
| 3.7 | Cost Estimation | 23 |
| 3.8 | Gantt Chart | 24 |
| 3.9 | Chapter Summary | 26 |
| CHAPTER 4: RESULTS AND DISCUSSIONS | | |
| 4.1 | Introduction | 27 |
| 4.2 | Prototype | 27 |
| 4.2.1 | Hardware | 27 |
| 4.2.2 | Software | 31 |
| 4.3 | Pest Management System implementation | 39 |
| 4.4 | Chapter Summary | 48 |
| CHAPTER 5: CONCLUSION AND RECOMMENDATIONS | | |
| 5.1 | Introduction | 49 |
| 5.2 | Conclusions | 49 |
| 5.3 | Future recommendation | 50 |
| REFERENCES 51 | | |
| APPENDICES | | |
| | Appendix A | 52 |

LIST OF FIGURES

| Figure No | Descriptions | Page No |
|-------------|---|---------|
| Figure 3.1 | Visual Studio Logo | 15 |
| Figure 3.2 | SolidWorks Logo | 15 |
| Figure 3.3 | MySQL Workbench Logo | 16 |
| Figure 3.4 | Altium Designer logo | 16 |
| Figure 3.5 | Prototype Dimension | 17 |
| Figure 3.6 | 3D Design Prototype | 17 |
| Figure 3.7 | Cross section of pest trap | 18 |
| Figure 3.8 | Three System part | 18 |
| Figure 3.9 | RCWL 0516 Microwave Radar Motion Sensor | 19 |
| Figure 3.10 | Transmitter | 20 |
| Figure 3.11 | Receiver | 21 |
| Figure 3.12 | Relay | 22 |
| Figure 4.1 | Receiver prototype | 27 |
| Figure 4.2 | Receiver connection | 28 |
| Figure 4.3 | Receiver circuit design | 28 |
| Figure 4.4 | Transmitter prototype | 29 |
| Figure 4.5 | Transmitter connection | 29 |
| Figure 4.6 | Transmitter circuit design | 30 |
| Figure 4.7 | Complete hardware prototype | 30 |
| Figure 4.8 | Login page | 31 |
| Figure 4.9 | Information page | 32 |
| Figure 4.10 | Home Page | 32 |
| Figure 4.11 | Monitoring page | 33 |
| Figure 4.12 | Indicator page | 33 |
| Figure 4.13 | First Library page | 34 |
| Figure 4.14 | Second Library page | 35 |
| Figure 4.15 | Inventory page for graphs | 36 |
| Figure 4.16 | List of Pest for Graphing | 36 |
| Figure 4.17 | Year selection | 37 |
| Figure 4.18 | Example of Graph | 37 |
| Figure 4.19 | Data event update page | 38 |
| Figure 4.20 | Install location | 39 |
| Figure 4.21 | Pest Alert | 40 |
| Figure 4.22 | Library | 40 |
| Figure 4.23 | IRRI Website Page 1 | 41 |
| Figure 4.24 | IRRI Website page 2 | 42 |

| | | |
|-------------|---------------------------|----|
| Figure 4.25 | Monitoring page | 43 |
| Figure 4.26 | Data Update | 44 |
| Figure 4.27 | Save data instruction | 45 |
| Figure 4.28 | Table loading instruction | 45 |
| Figure 4.29 | Data delete instruction | 46 |
| Figure 4.30 | Inventory page | 46 |
| Figure 4.31 | Rice Bug Chart | 47 |
| Figure 4.32 | Ant Chart | 48 |

LIST OF TABLES

| Table No | Descriptions | Page No |
|-----------------|---------------------|----------------|
| Table 1 | Component Budget | 23 |

LIST OF ABBREVIATIONS

| Abbreviations | Descriptions |
|----------------------|---|
| 3D | - Three Dimension |
| AC | - Alternative Current |
| BPH | - Brown Plant Hoppers |
| DDT | - Dichlorodiphenyltrichloroethane |
| DOI | - Digital Object Identifier |
| GUI | - Graphical User Interface |
| IOT | - Internet of Things |
| IDE | - Integrated Development Environment |
| IR | - Industrial Revolutions |
| IRRI | - International Rice Research Institute |
| MHZ | - Mega Hertz |
| N.D. | - No Date |
| PIR | - Passive Infra-Red |
| RC | - Radio Controlled |
| SPDT | - Single Pole Double Throw |
| SQL | - Structured Query Language |
| V | - Voltage |
| VDC | - Voltage Direct Current |

CHAPTER 1

INTRODUCTION

1.1 Introduction

This project act as a management system of a pests. This project is created and will be implemented in an agriculture field or any smaller place than a farm. Even this project can be implemented in a building or a house. By implementing this project, farmer can control number of pests, reduce the usage of pesticide and reducing the number of damaged plants in a farm and creating a healthy environment. There are lots of kind of pest in the surrounding but in this project more focused on the species of paddy hoppers. The hoppers have brought lots of damage around the farmer plantation field. This project was total combination with integrated circuit and high technology of software.

The system features will help in prevent these creatures to be roaming around the target area. The species of the paddy hoppers have many types but most dangerous to the plantation was the brown plant hoppers (BPH). Two viruses were transmitted by the BPH after feeding the rice, which is rice ragged stunt virus and rice grassy stunt virus. Therefore, this project will be able to improve plants health through cultural strategies, monitor pest population, maintain records, and determine when consumption of pesticide is appropriate. To improve the plants health and controlling the usage of pesticide, this system will also help to reduce or minimize risks to human health.

As mentioned in the first paragraph, this project will monitor pest population, maintain record, and determine when pesticide use is appropriate. All these operations will be done using a system that act as monitor and data recording plus a sensor that act as detector for pest's existence. Meaning, that users only need to monitor through the system as the hardware will send the signal to the system. The system used in this project will be an easy system which will make user or farmer easier to manage this system. For a better situation, this system will also be easier to run maintenance.

1.2 Background of the project

More than 30% of loss of crop that cause by pest according to the farmers. Losses can be diagnosis timely and accurately if the agriculture have a good management. This project proposes to collect data and manage paddy field from insect such as leafhoppers, brown plant hopper, leptocorisa, Rhyzopertha dominica [1], etc. By using this system, farmer can manage the farm from pest and manage the use of pesticide by referring to the graph plotting from the system. For the project, we also need a detector as an early trace of the insect, so that, it will need a low-power image sensor.

1.3 Problem statement

To overcome the pest problem, there must be a system so that the problem can be solve from the very beginning. So before starting the idea of this project, there must be some problem that have not been solve by the system of appliances that already existed before this. The main question behind all of this was how to overcome pest efficiently. Based on the appliances that already existed all this while, users or farmer only use pesticide to overcome pest. However, the consumption of pesticide is the main method that have been used and the effectiveness of it have been prove. But all this time the user or farmer only use

pesticide without any regulation on using it. As pesticide can lead to unhealthy growth if it is overused.

Next is the discussion on how to reduce the consumption of pesticide. To reduce or to control something, there must be a system to manage it. For that, this project has been built as a system to manage the pest so that the usage of pesticide can be controlled or reduced. Meaning that this project was built to ease user or farmer in identifying the ideal amount of pesticide they need to use by referring to the graph of pest attack.

1.4 Objective of the project

There were some objectives to achieve in the development of this project.

- To reduce utilization of pesticide which is hazardous to the farmers.
- To build a software system that are more reliable for farmer.
- To reduce loss and damage that made by pest.

1.5 Significance of the project

This project is an introduction towards Industrial Revolution 4.0, which interconnects different technologies aimed at improving yield and sustainability of crops, increasing working conditions, and the quality of production and processing. It is because agriculture chains are too difficult and complex, and causing a bad production and storage. Moreover, agricultural agencies need more young generation that understand the internet of things (IoT). IoT and data base was an example of agriculture agenda in our country as beginner of smart agriculture practice. It is in parallel with automation technology that becomes current global trending in Industrial Revolution 4.0 (IR 4.0) [2]. Hereby, this project is highly recommended for me to make as a student.

1.6 Scope and limitations of the project

This project is focusing on controlling pest. By controlling pests, this project also can monitor and record the number of pests. Not to mention that this project is good, but still need some improvement in the future. But of course, there must be some limitations that occurs in this project. All the limitations that occurs can be considered as the bonus for anybody to upgrade this project. So, by referring to the technology used in this project, it has its own disadvantage. This project or system cannot be used during raining. This is because the transmission for the transmitter and receiver will be disturbed by the pouring of rainwater. The heavy rainwater also will cause a dangerous to the user as the system used electric power as it is power supply.

1.7 Chapter Summary

The pest has brought much major disease transmission and have cause a lot of loss for the living things especially to the plantation.

With the existence of the system, it will be monitored the paddy field from pest. This is to ensure that the plantation was free from the pests that can destroy the paddy field. Therefore, the conclusion that can be made the system are working to ensuring the Malaysian people are having a healthy lifestyle because the use of pesticide can be controlled wisely.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Literature review will explain and dissolve all the system or tool that have been used before the development of this project. Hence, there will be some overview of any journals or articles that have been wrote that are related to this project. There must be any system or tool that are already exist before this. By making a slight review of all the journals related to this project, the development of this project can be done properly and smoothly. This is because on every journal written before, there must be some shortage that can be repair and added to this project.

2.2 Definition of Pest

Pests are any organism that existed between the activities and desires of human. The categories of pests are pathogens, weeds (for vascular plants), molluscs, nematodes, arthropods (mites, insects' crustaceans, and other joint legged invertebrates), and vertebrates (animals, reptiles, amphibians, and birds). There are three main factors that affect the breeding of pest. The three main factors are time, plant, and environment. Meaning as the evolution of time happen, the growth of plants, and the development of environment, pest will also breed along with all these factors.

2.3 History of Pesticide

Pesticide have been used from ancient times. Early mid-20th century, before the 1940's, most pest control were derived from organic compound or plants. While after the world war two, the type of pesticide used were the DDT(Dichlorodiphenyltrichloroethane). The DDT is a tasteless, colourless and almost odourless crystalline chemical compound, originally created as insecticide, an organochlorine and amazingly become famous for its impact on environment. DDT was available for sale to public by October 1945 in United States. There was a book wrote about the bad impact of this DDT. It says that DDT can cause cancer and threaten wildlife and especially birds. This DDT was used to lead resistance and it is a quick success in pesticide field. But the cancellation order of the production of DDT was issued in 1972 [5].

While on the mid-20th century, on the modern day, a new era of pest control in chemical industry has begun [5]. Chemicals are seasons long protection, if compared chemical has lower cost and compliment other agriculture practices. The main issue occurs this day is the resistance to chemical. This resistance to chemical issue to the environment and bioaccumulation brings to a great concern and awareness.

2.4 Pesticide on Farm Animals and Human Beings

From this journal Research Journal of Chemical and Environmental Sciences August 2013 by Department of Zoology University of Rajasthan, Jaipur (India) [3]. The consumption of pesticide may cause harm to the environment, animals, and humans because they are designed to kill or to effects living organisms. An effective pesticide must be able to kill living organisms, but it can be risky to human, animals and environment. User that uses pesticide or was there when pesticide is being used, is risky to face dangerous health exposure. There are actually a few types of pesticides which are organic pesticide, natural pesticide, and chemical pesticide. Although there are natural and organic pesticide, they are not as

effective as the chemical pesticide. As the organic and natural pesticide will have their own condition that can make them effective. Plus, even the natural pesticide that are quite safe because it is derived from plant, but still they can be toxic as their synthetic counterparts.

This journal supporting the idea of this project, as it says that the consumption of pesticide needs to be controlled. Because even though there is a safest pesticide found, it will always have its own lack. As the idea of this project is to manage and monitor the amount of pest, user of farmer can control the usage of pesticide. By controlling the usage of pesticide, the bad impact of pesticide to human, animals and environment can be reduced.

2.5 Impact on farmer by using unsafe pesticide

Like other developing country, this is a case study in Burichong Upazila, Bangladesh, agriculture play an important role in the economic contribution of a country. Same goes to Bangladesh, agriculture is a major contribution of the country. For that, to make sure their survival, they need to make sure their plants are not damaged and good to sell. The farmers in Bangladesh mainly use various type of pesticide for their vegetable farm, in a form of granules, liquid and powder. Usually the farmers use the pesticide without knowing the actual necessity and or its effectiveness. Especially the farmers in the developing country. They even use the pesticide frequently even if it is unnecessary [4].

Farmers and workers at Bangladesh use to spray pesticides in crop. That action has highly exposed them to various disease as it is done frequently without taking care of any safety precautions. Meaning that while they are spraying the pesticide, they did not wear any masks, gloves, or any other safety wear. The pesticide can be absorbed into human body through so many parts, such as forehead, scalp, abdomen, ear canal, palm, forearm, ball of foot and genital area

[4]. All the parts listed are usually human did not expect that they can absorb the pesticide and cause harm to the body. The type of diseases that can be infected caused by the absorption of pesticide into the body are abdomen pain, dizziness, headaches, vomiting, including eye and skin problems.

The problems and shortage discussed above, prove that the development of this project is vital and may bring to an attempt to avoid such problems. Other than that, all the things that mentioned are contains two of the objectives of this project. They are to reduce the consumption of pesticide and to build a system that are more reliable to farmer or user.

2.6 Pest Control Device

There are a lot of pest control device that have been use all this while. As an example, pesticide, ultrasonic sound wave pest control, pest repellent, trap pest control, stick paper pest control and many more. All the devices invented are lack of management system. This is because all the pest control device only been used without any monitoring activity is done. Meaning, how to assess the effectiveness and the result of the device if there is no management system that can monitor the increasing or decreasing number of pests. Users will want to know the effectiveness of the device they used. So that if the device does not give a good result of their problem, they can change the device. But if the device solves their pest problem very well, so they can stick to the device.

Even if the user used the pest repellent or the ultrasonic sound wave pest control, they still need to monitor the result the effect of the device to the pest at their place. Because not all type of pest reacts with the pest repellent or the ultrasonic sound wave pest control device.

This brings in necessity of this project to be implemented at any place that pest can be found. Because when user can manage the amount of the pest, they can also manage the consumption of pesticide and choose the type of pest control device they want to use.

2.7 Chapter Summary

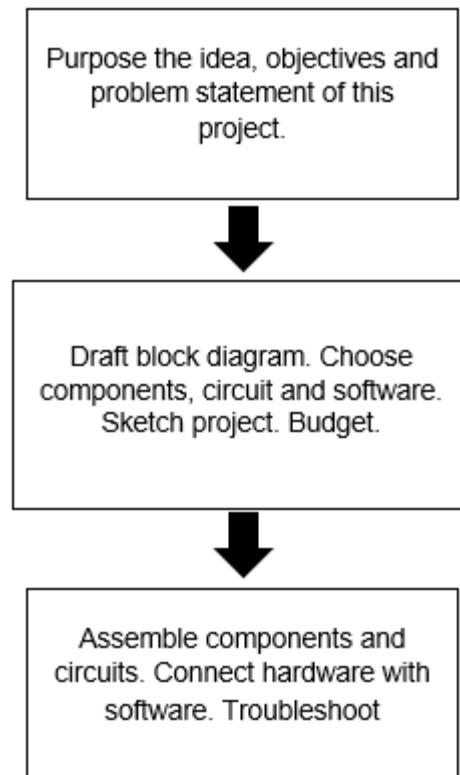
From the literature review, it shows that the pests are very dangerous. The diseases that are involved by the transmission of the pests to destroy the plantation. This system will help the society to live a healthy lifestyle. My project is more focused on paddy hopper that cause of losses to the paddy field.

CHAPTER 3

METHODOLOGY

3.1 Introduction

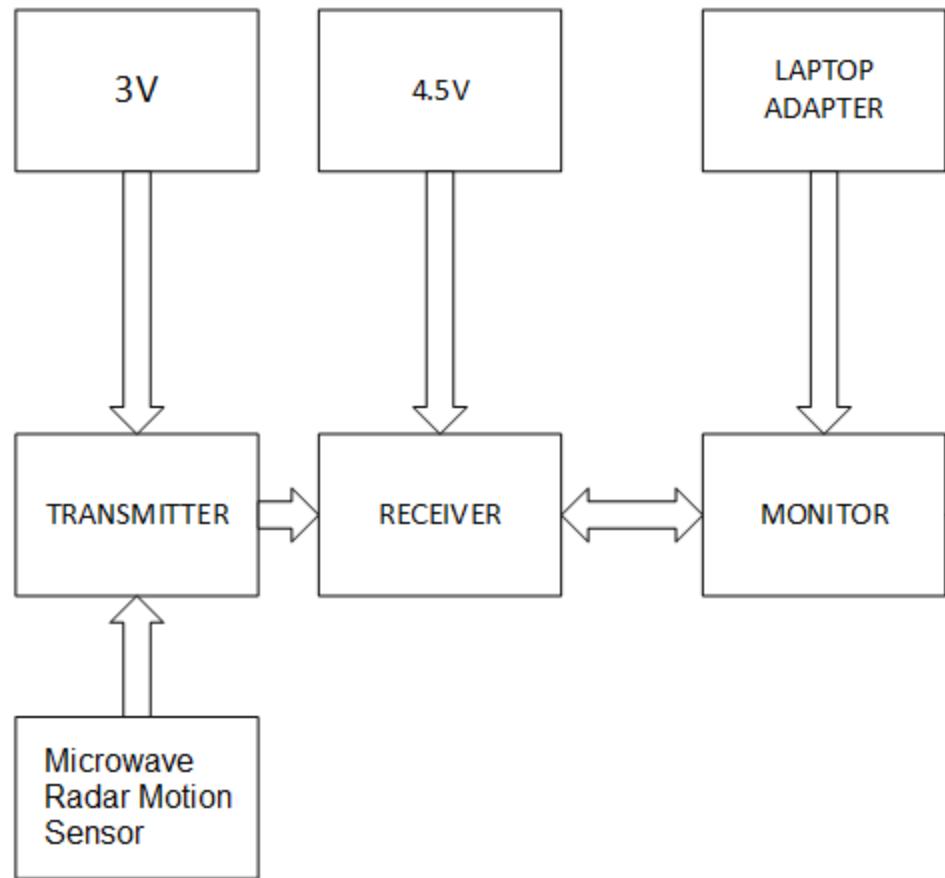
In the methodology will describe what kind of methods and steps used to build this project. Other than that, this chapter will reveal the actual components operate along with the workflow to complete this project. Plus, some explanation on the system used and the reason on why to choose the components and system used. To make sure all the steps were followed properly, a workflow must be built. The workflow will help on arranging all the steps properly, so at the end of this project, it will turn out according to the plan.



Block Diagram 1 Process of Proposal

3.2 Block Diagram

To start this project, the flow of the operation of this project will need to be organized. This is to make sure the function of this project will complete well as desired. Also, to imagine the output of this project will show exactly as needed.



Block Diagram 2 Pest Management System

Based on the block diagram, the inputs are from many sources which will be using battery double A. There were two parts of component which are, input section, and monitoring section.

At the input section, the transmitter needs 3volt of supply to keep sending a data to the receiver, sensor that going to be use is microwave motion sensor to detect a pest. The receiver will use 4.5 volt to keep searching on signal from the transmitter, and to send a signal to the computer to analyze.

The monitoring part are going to use an adapter, because laptop is going to be the main part of this system for analyze the data that get from the transmitter.

For monitoring, the graph the start and the stop of system can be control by auto and manually. In monitoring side, a graphical unit interface will be open to control the system, also to monitor the frequent of the pest harming the farm.

3.3 Flow chart

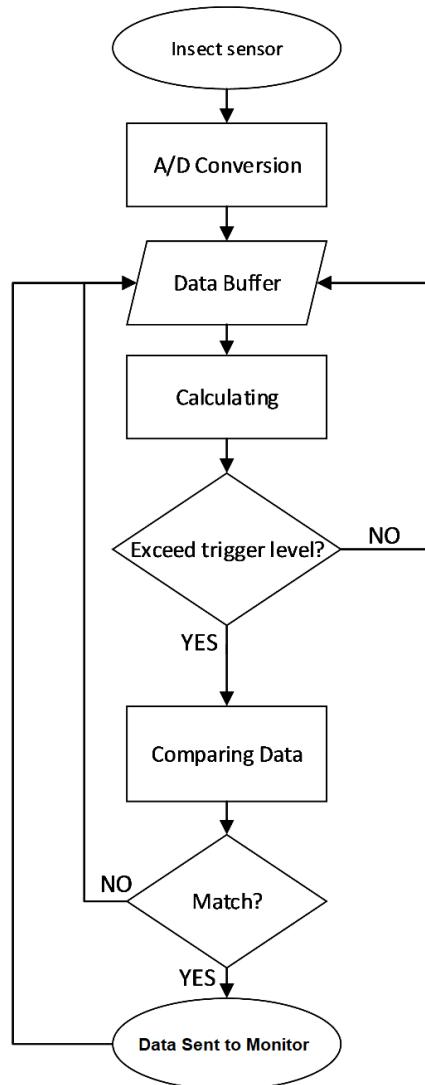


Chart 1 Process Flowing

The first step that will be made by this project is detecting the presence of pest using the PIR motion detector. By sensing the movement of pest, the motion will mark it as a presence of pest. In other words, any type of pest will be detected.

Next was when the motion detector detects the presence of pest, it will send data to the transmitter. The transmitter will convert the data into signal so it can be transmitted. The transmitter is in the loop. Meaning, if the sensor motion detects the presence of pest, the transmitter will receive a data from sensor motion. If not, the transmitter will not receive any data from the sensor motion as there is no presence of pest.

The next move is that the receiver received signal from transmitter. The system will get the signal that transfer from the receiver by convert the signal into digital.

Finally, the system will collect data from receiver. The data collected will be recorded and counted to get the number of pests for every day, every week, every month, and every year. This is to observe the increasing and decreasing number of pests. By using the data from the monitor, farmer or user can slightly estimate the amount of pesticide to be used if needed.

3.4 Simulation Software

3.4.1 Visual Basic

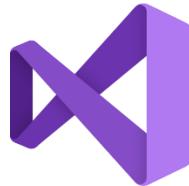


Figure 3.1 Visual Studio Logo

Visual basic inside the visual studio is a latest generation event-driven programming language form Microsoft and it is an integrated development environment (IDE). This visual basic able to create an application or software using the components or tools provided by the Visual Basic. All the tools provided by this programmed ease to create the system Graphical User Interface (GUI) for this project.

3.4.2 SolidWorks



Figure 3.2 SolidWorks Logo

SolidWorks will be use after the project is finalize, it can simulate a 3Dimention prototype of the whole system, so that it will be clear to see and animate the component to the real size from the other component parts. It is suitable to use to design a prototype of some product.

3.4.3 My SQL Workbench



Figure 3.3 MySQL Workbench Logo

As roughly, MySQL is used as an online data storage. All the pest attack event will be stored into MySQL Workbench. By using MySQL, the data that stored will easily to call or display through the software. Besides, MySQL is free for the user.

3.4.4 Altium Designer



Figure 4 Altium Designer logo

Altium Designer is used to simulate the PCB design of Transmitter and Receiver. Altium Designer is user friendly and easy to use. By using Altium Designer 2020, the printed circuit board was drawn to show the clear component connection of Transmitter and Receiver.

3.5 Plan layout

3.5.1 Hardware Design

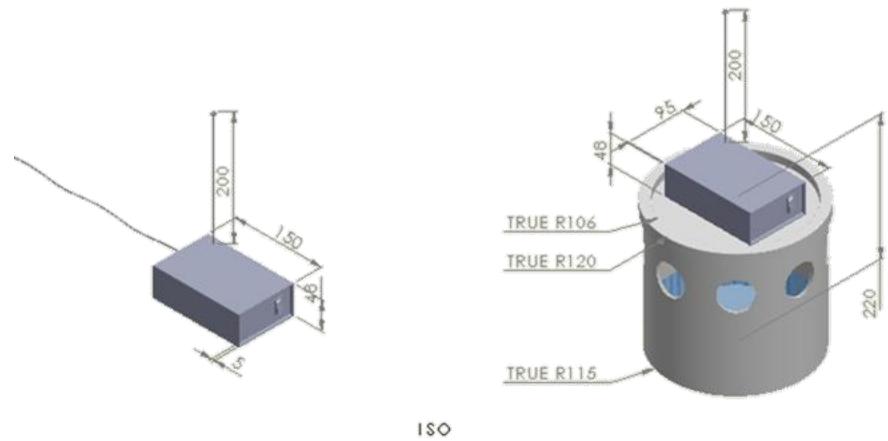


Figure 3.5 Prototype Dimension

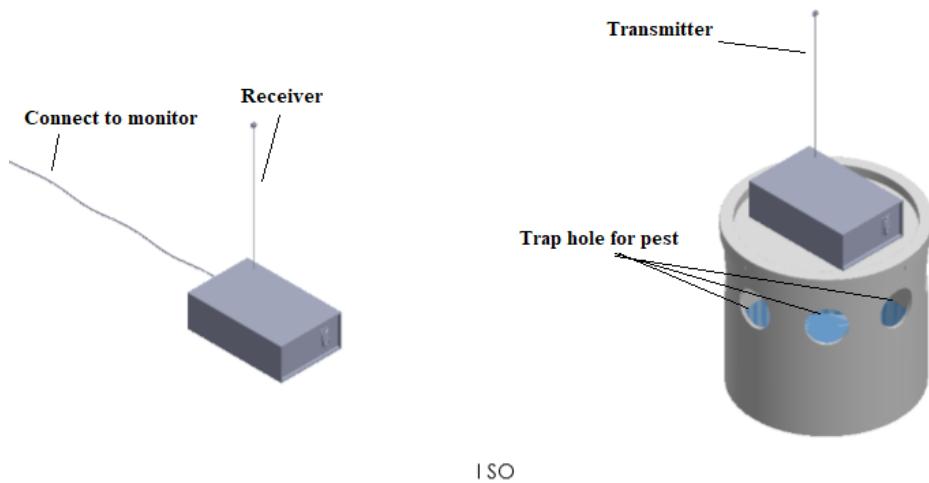


Figure 3.6 3D Design Prototype

There will be two prototype designs of this project. this is because that the design of the prototype is for two types of circumstances. The first circumstances are for fields, farms, and gardens. As at these places, the cylinder box is filled 1/3 with water so that when the pest enters the box, it cannot come out, hence trigger the sensor to send to the monitor which trough wire from the receiver. There will be no problems for this project to detect the presence and the movement of pest around it.

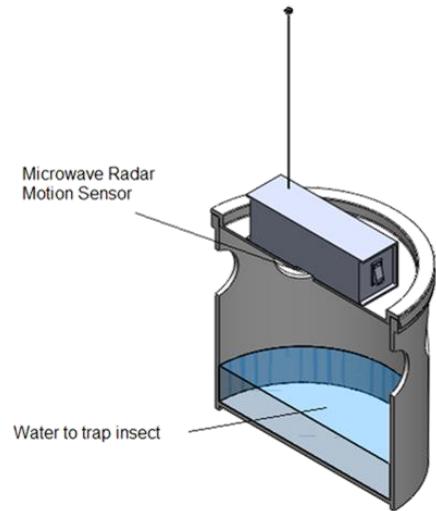


Figure 3.7 Cross section of pest trap

While the second prototype design is for monitoring, the laptop or computer is connected to the receiver by radio frequency. It detects the frequency that transmit from the transmitter from the antenna.

3.5.2 Software Design

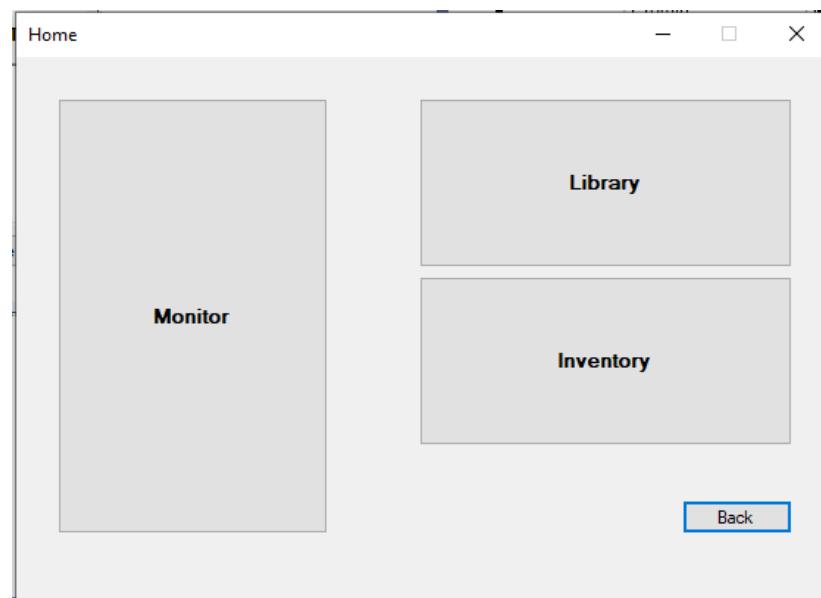


Figure 3.8 Three System part

For the software design, there will be three sections and each part will have its own function. The first one is Monitoring, this is where the farmers or users will open most of the time for monitoring the farm, for example paddy field. Second section is Library, in the library section, users able to find the information about pest such as the habitat, the scientific names, the effect of pest attack, etc. At last, in the Inventory section, users able to record the event of pest attack. Besides, users able to analyze the data by referring to the bar chart that produce by this software according to the event of pest attack. So that, farmers able to manage the usage of pesticide wisely.

3.6 List of component/equipment

3.6.1 Microwave Radar Motion sensor

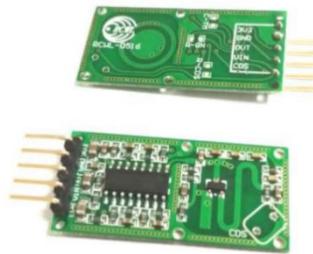


Figure 3.9 RCWL 0516 Microwave Radar Motion Sensor

The main component used in this project is the Microwave radar motion sensor. This motion sensor will sense the presence of pest around it with specific range it can cover and can be adjusted. The motion sensor used for this project is the RCWL 0516 Microwave Radar. This type of sensor operates by sensing the movement of an object (human, animal, object, etc.).

This module has been designed as an alternative to the PIR motion detectors commonly used in burglar alarms. The Microwave Doppler Radar are focus on detecting moving object instead of moving person that detect by PIR motion sensor. It has a sensitivity range of 7 meters. When triggered its trigger output pin will switch from 0 V to 3.3V for 2 to 3 seconds before returning to its idle 0V state.

3.6.2 Transmitter

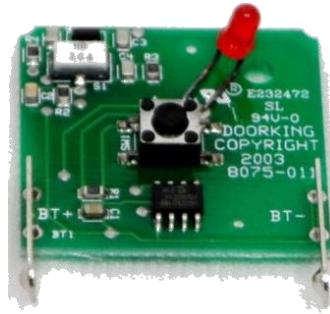


Figure 3.10 Transmitter

For this project, transmitter will receive data from motion sensor and convert it to signal. A transmitter or also known as radio transmitter is an electronic device that produce radio wave through antenna. The transmitter generates a radio frequency alternating current (AC), which is applied to the antenna. When aroused by this alternating current (AC), the antenna emitted radio waves. This radio wave can be transmitting to the receiver [7].

This transmitter circuit have the same application as the one used in the remote control can transmitter. This circuit only need 5v input voltage. The range of frequency that have been chose for this project was 27MHz.

3.6.3 Receiver



Figure 3.11 Receiver

The receiver in this project will act as the receiver of the radio wave send by the transmitter. Receiver is also known as radio receiver. This receiver is an electronic device that receives radio waves and converts the signal carried by them into a usable form (data etc). the radio waves receive by receiver is through the antenna. The antenna receives the radio waves (radio frequency) and convert them into tiny alternating current (AC) that are applied to the receiver, and the receiver extract them according to the desired information [7].

The receiver circuit used in this project is basically has the same application as the one used in any remote-control car. The voltage supply for the receiver circuit is 5v with the frequency of 27MHz.

3.6.4 Relay

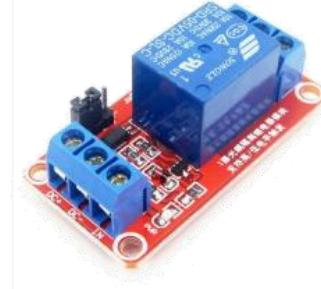


Figure 3.12 Relay

Relay works as an electrically operated switch. For this project, a single pole double throw (SPDT) relay needs to be used. This relay has one common terminal and two contacts in two different configurations. The contacts and configurations can be in normally close while the other one is open, or it can be normally open while the other one is close. Meaning the SPDT relay can be a switching between two circuits. So, when there is no voltage applied to the coil, one circuit receives current and the other circuit does not and vice versa. This SPDT relay will need 5v supply.

The use of this SPDT relay is because this project will not have any switch (ON OFF) button. This project will not get any supervision from user to turn it ON or OFF. The SPDT relay will act as the automatic switch in this project.

3.7 Cost Estimation

The budget of this project was estimated worth RM 100. This amount can be classified as affordable. As the budget already include the casing of this project. But there will be more cost that will be added in the budget. So, the rough estimated budget is only for the initial budget for this project. The table below will list down the price of each of the components.

Table 1 Component Budget

| Component | Visual Aids | Price | Quantity |
|--|-------------|----------|----------|
| RCWL 0516 Microwave Radar Motion Sensor | | RM 12.40 | 1 |
| Transmitter | | RM 20.00 | 1 |
| Receiver | | RM 20.00 | 1 |
| Relay | | RM 8.00 | 2 |

| | | | |
|-----------------|---|-----------------|---|
| Case |  | RM 7.00 | 2 |
| 2A size Battery |  | RM 6.60 | 3 |
| TOTAL | | RM 95.60 | |

Prices are not including postage and tax

TOTAL: RM 95.60

3.8 Gantt Chart

The table shown below will be the Gantt chart for the time taken for the idea of this project to be developed. Basically, the Gantt chart is important for the development of this idea so that all the progress was done according to the schedule. The record of the time taken for the idea of this project to complete also important so that if there is any other researcher out there that might want to recreate or upgrade this project, can refer to this Gantt chart to know the time taken for the idea of this project to finish.

| NO | ACTIVITIES | WEEKS | | | | | | | | | | | | | | | | |
|----|---|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 1 | SELECTION OF SUPERVISOR | | | | | | | | | | | | | | | | | |
| 2 | SELECTION OF PROJECT TITLE | | | | | | | | | | | | | | | | | |
| 3 | FYP BRIEFING | | | | | | | | | | | | | | | | | |
| 4 | MEET UP SUPERVISOR | | | | | | | | | | | | | | | | | |
| 5 | PRESNTATION SLIDE | | | | | | | | | | | | | | | | | |
| 6 | REPORT WRITING | | | | | | | | | | | | | | | | | |
| 7 | PRESENTATION DAY | | | | | | | | | | | | | | | | | |
| 8 | PLAGIARISM DETECTION | | | | | | | | | | | | | | | | | |
| 9 | PROPOSAL AND PROGRESS REPORT SUBMISSION | | | | | | | | | | | | | | | | | |

Chart 2 Weekly Gantt Chart

| NO | ACTIVITIES | MONTH | | | | | | | | | |
|----|-----------------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| | | JULY 19 | AUG 19 | SEP 19 | OCT 19 | NOV 19 | FEB 20 | MAR 20 | APR 20 | MAY 20 | JUNE 20 |
| 1 | INTRODUCTION | | | | | | | | | | |
| | a) problem statement | | | | | | | | | | |
| | b) project background | | | | | | | | | | |
| | c) Objective | | | | | | | | | | |
| 2 | LITERATURE REVIEW | | | | | | | | | | |
| 3 | METHODOLOGY | | | | | | | | | | |
| | a) Block Diagram | | | | | | | | | | |
| | b) Flowchart | | | | | | | | | | |
| | c) Schematic Diagram | | | | | | | | | | |
| | d) Simulation | | | | | | | | | | |
| | e) Cost Estimation | | | | | | | | | | |
| 4 | RESULT AND ANALYSIS | | | | | | | | | | |
| 5 | PROPOSAL REPORT | | | | | | | | | | |
| 6 | PROTOTYPE | | | | | | | | | | |
| 7 | PROJECT REPORT | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Chart 3 Monthly Gantt Chart

3.9 Chapter Summary

This chapter discussed on the methodology used to ensure the system will work. The system is the product of the combination of the hardware and software. All the parts that have been used to ensure the system also have been discussed in this chapter. The blocks diagram, flow chart and the process flow are also provided because it is one of the vital to the system because it is one of the methods to ensuring the objectives of the system are achieved.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter will discuss the installation of the Pest Management System in the Paddy Field. The details the analysis and record result by testing the Pest Management System to install location.

4.2 Prototype

4.2.1 Hardware

For the hardware section, there is three main part which is the insect trap, the transmitter, and the receiver. The transmitter and the receiver were covered by black plastic box of 150mm length, 48mm height and 95mm width of size.



Figure 4.1 Receiver prototype

The receiver was the one that contain wire to connect to the monitor. The component inside the receiver is recycle computer mouse, 5VDC relay, the RC receiver, 3VDC supply and the On and Off switch.

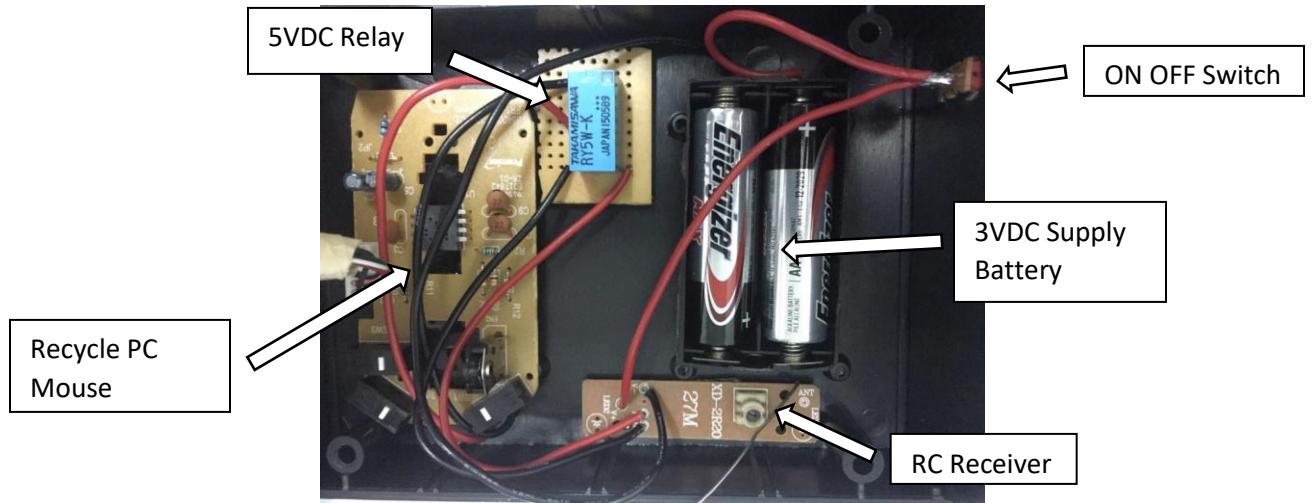


Figure 4.2 Receiver connection

The circuit connection of receiver was in the circuit picture below:

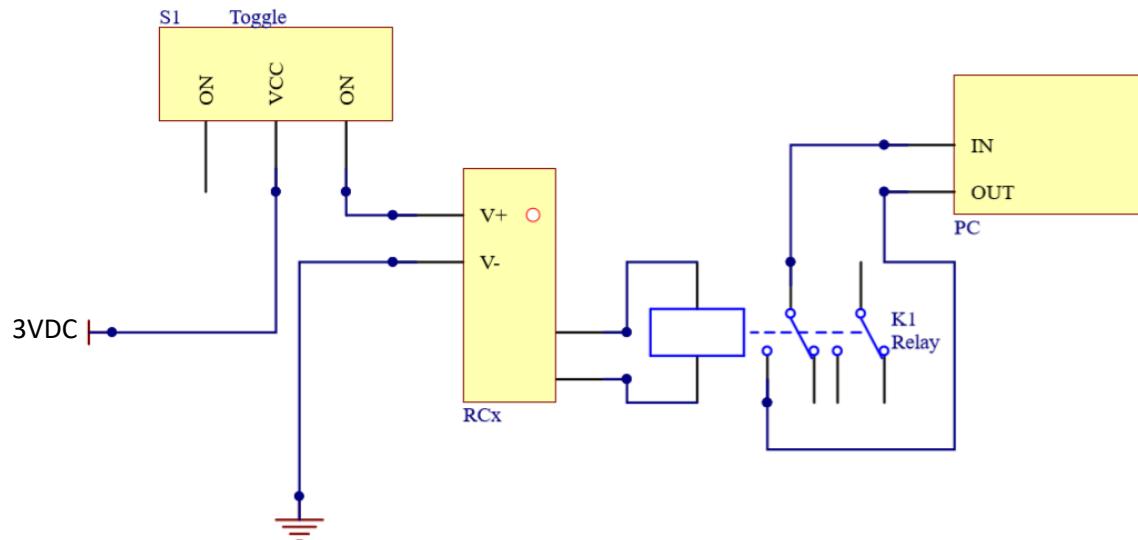


Figure 4.3 Receiver circuit design

The transmitter part was the one that wireless, the signal was transmitted through radio frequency by RC transmitter. The component inside the Transmitter was 4.5VDC supply, RCWL 0516 Microwave Radar Motion Sensor, RC Transmitter, and On Off Switch.



Figure 4.4 Transmitter prototype

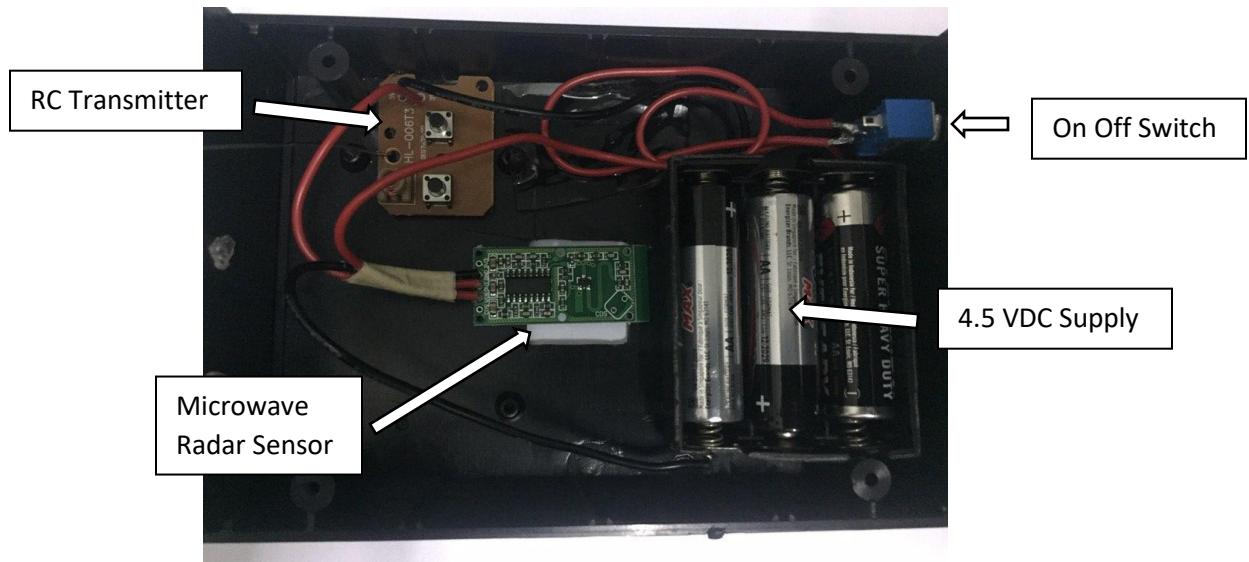


Figure 4.5 Transmitter connection

The circuit connection of transmitter was in the circuit picture below:

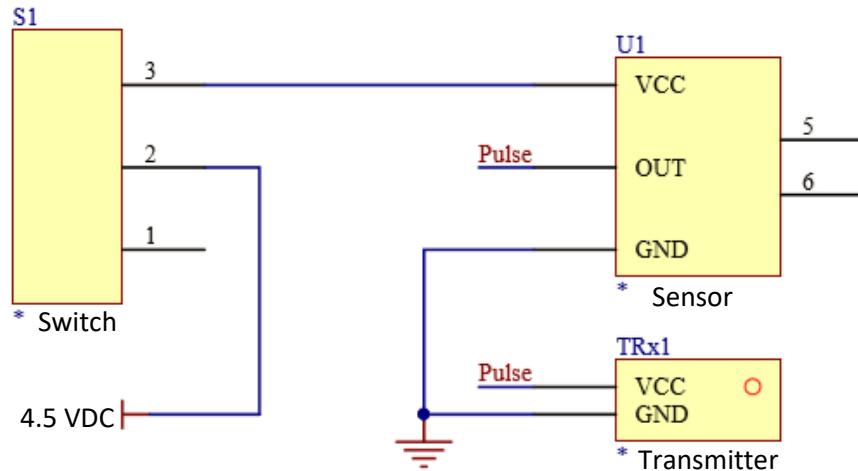


Figure 4.6 Transmitter circuit design

Figure 19 shown the complete hardware section together with the insect or pest trap. The pest trap container was build using recycle wall paint container. The hole was used to create the door for the pest to enter, and trap the pest using water that fill quarter of the container.

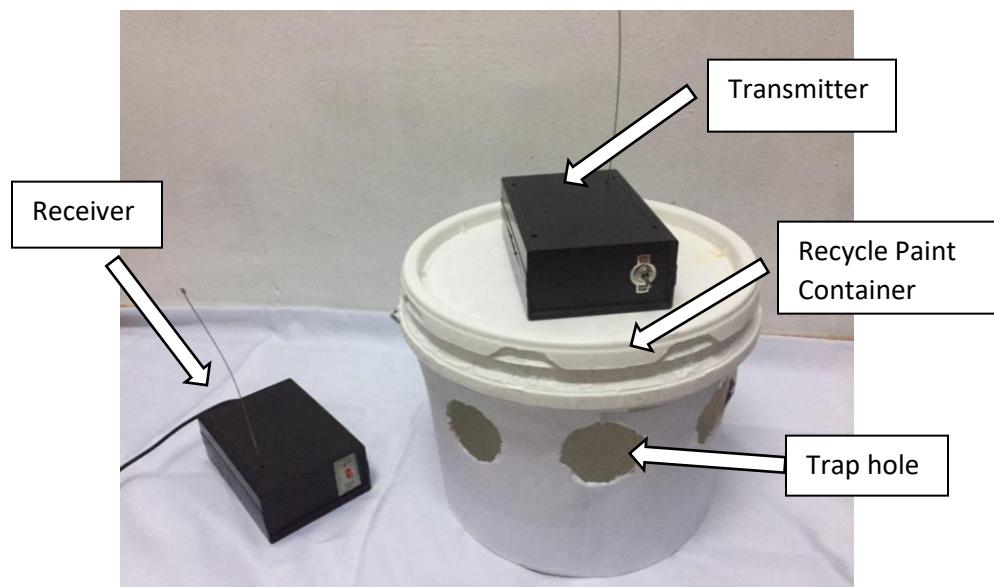


Figure 4.7 Complete hardware prototype

4.2.2 Software

The software was finalized, and the objective is achieved. However, there will be some weaknesses and recommendations for this software after testing and after release to users. The explanation of software is below:



Figure 4.8 Login page

Login page will be the first display when open the software, user need to key in their username and password to enter the system. The password is used to protect the data from other people. So that, only the person who know how to use the apps can get excess. The password and username only can be changed by the provider.

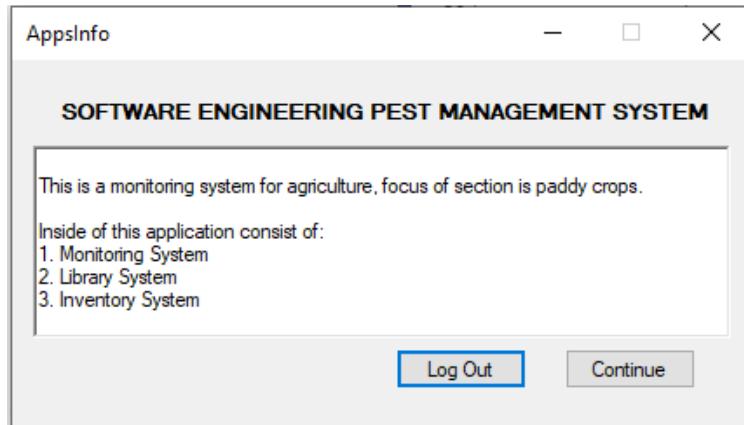


Figure 4.9 Information page

For the information page, it states the used of this software, and an information about this software application. And has a button to continue using this software or logout to the login page. If the button continue is clicked, Information page will be closed and open another page, which is the Home page.

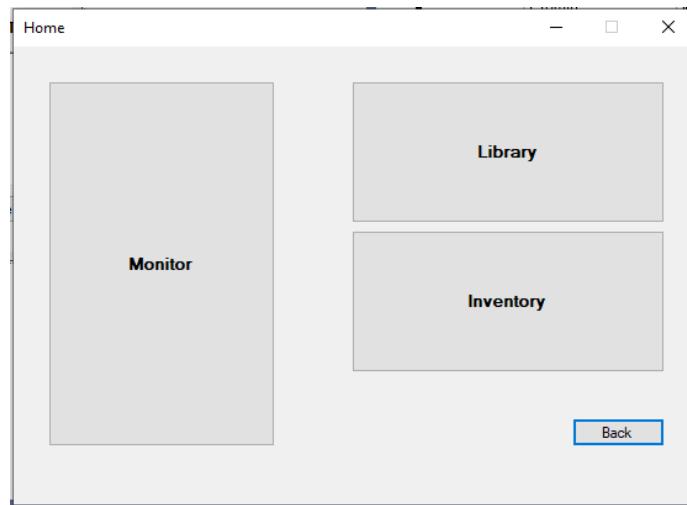


Figure 4.10 Home Page

In the Home page, there will be three button which is the Monitoring system, the Library of various pest, and Inventory page. All three pages has their own system and function. To close the hope page, click the back button to go to previous page, which is application info page.



Figure 4.11 Monitoring page

When Monitoring page is open, the monitoring will automatically start, this page will be used as farmed the most of time. To stop the monitoring, user can click the stop button and then it changes the Home page. The page will show the real time and date while using the monitoring system.

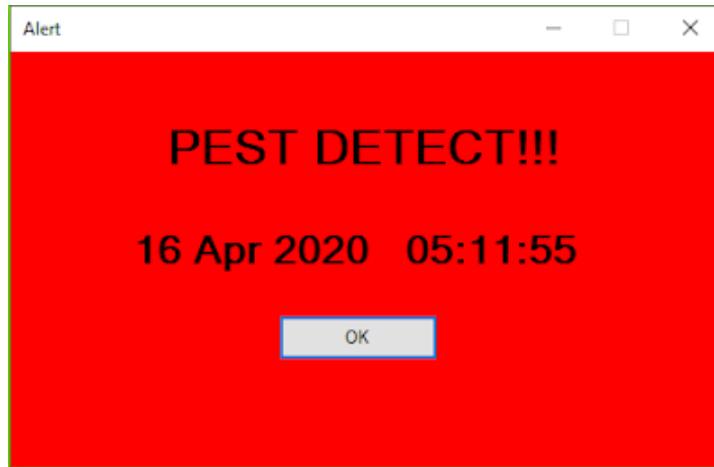


Figure 4.12 Indicator page

The Alert page will be pop-up when any pest is detected inside the trap. The receiver will send a signal through wire and send it to this software. The Alert page will display the time and date that the pest entered the trap.

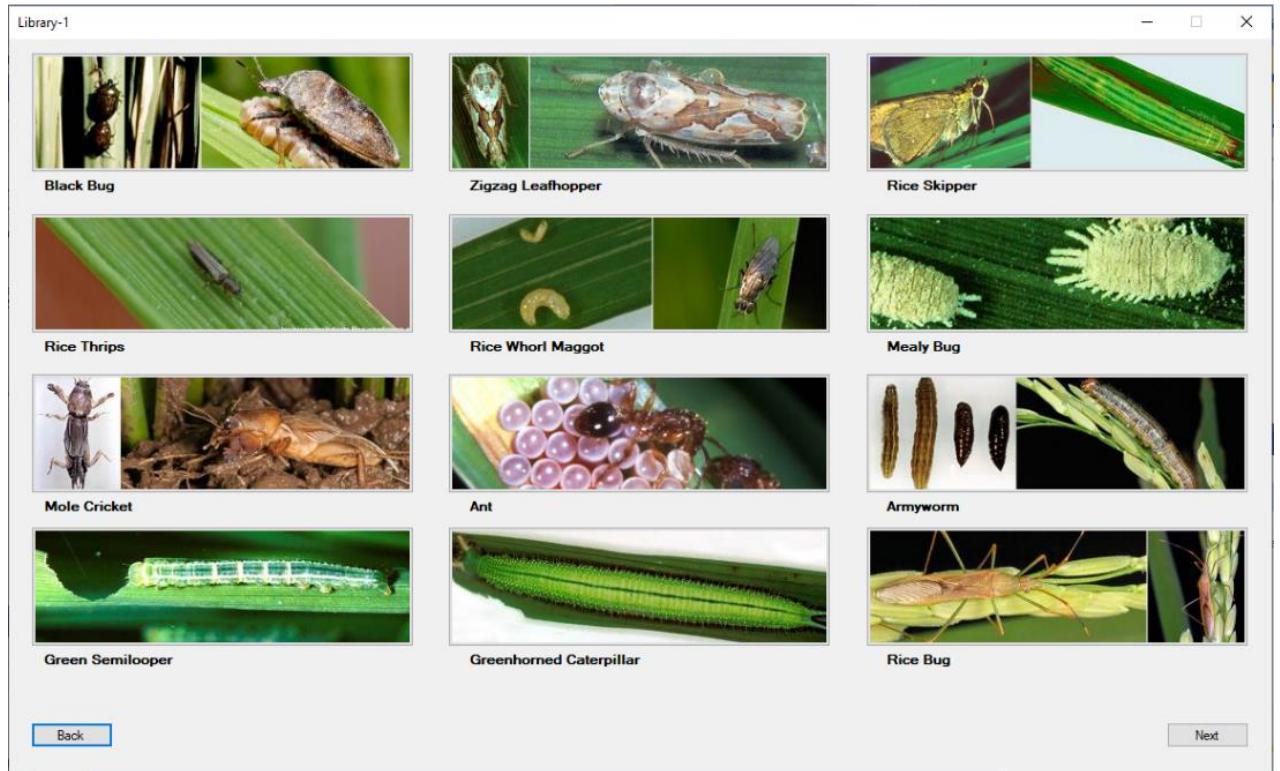


Figure 4.13 First Library page

This Library contains various pest information that has in Malaysia. User can click at any type of pest, and the information about the pest will automatically open by web browser. The information about the pest such as the habitat, the damage that cause by the pest, etc. Users need to have excess to the internet so that the library can be use.

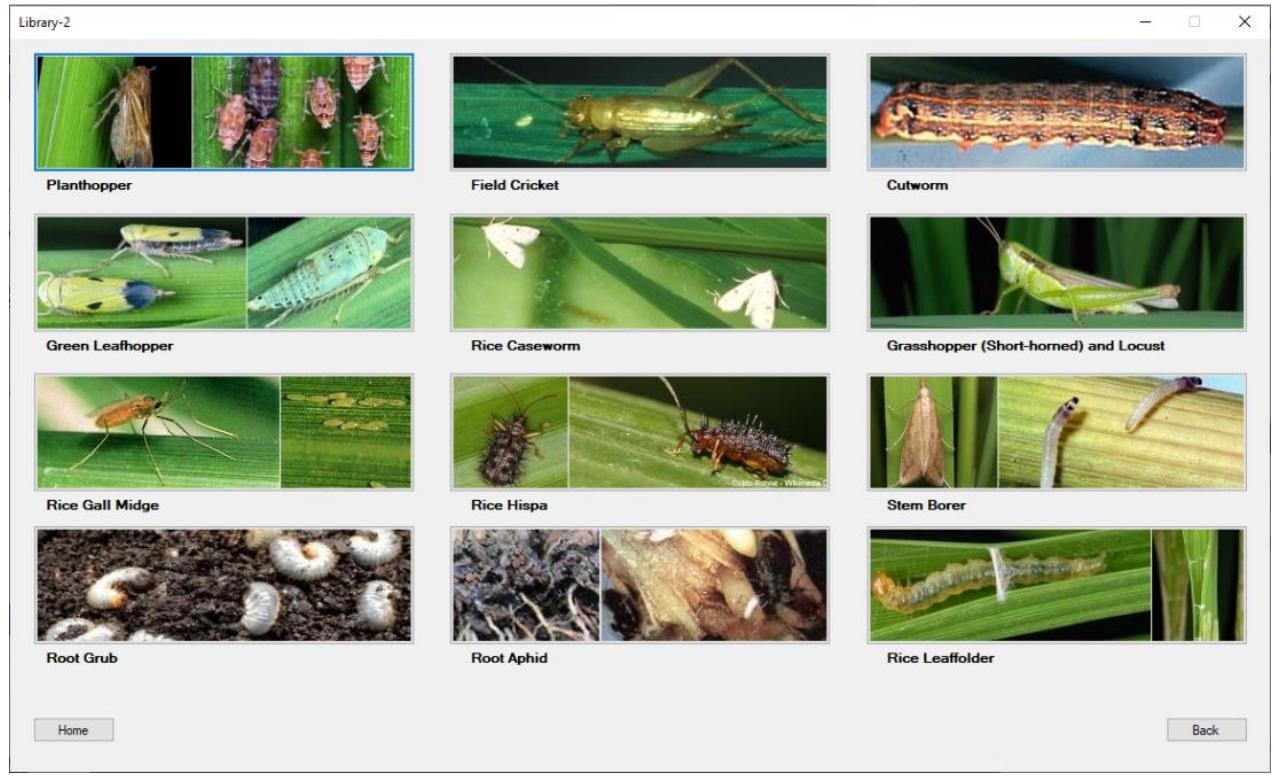


Figure 4.14 Second Library page

To close this page, farmer or user can click the Home button and the page will close and change to the Home page.

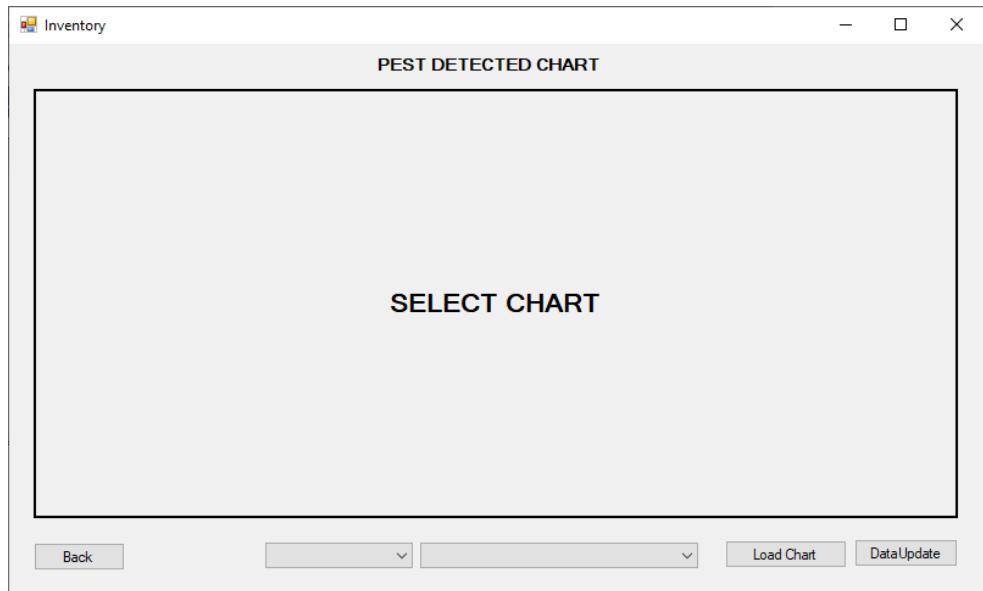


Figure 4.15 Inventory page for graphs

Inside the Inventory page, user can review the data of pest attack by chart. Users need to select the year and type of pest firs. So that, only one type of pest will be display.

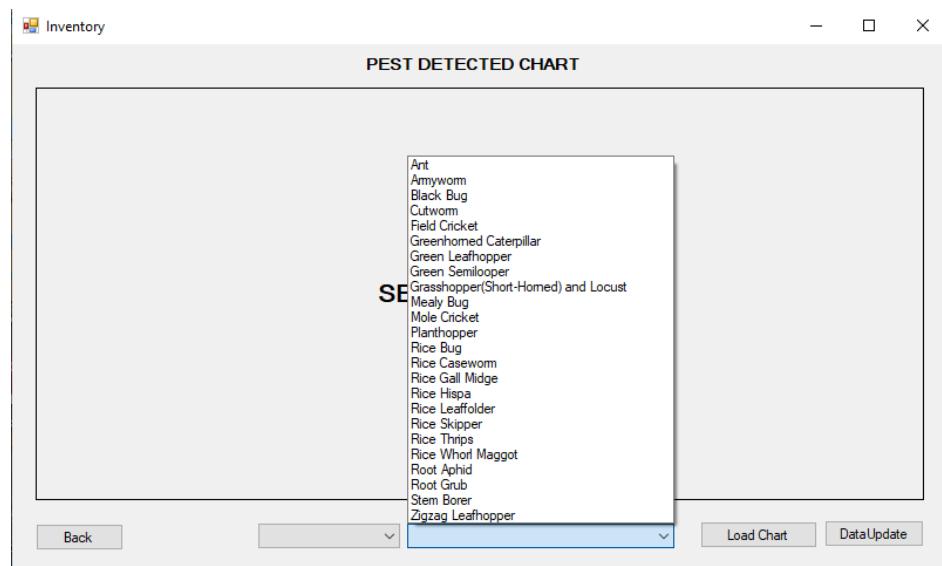


Figure 4.16 List of Pest for Graphing

In the selection, there is 24 types of pest can be select such as Ant, Armyworm, Black Bug, etc.

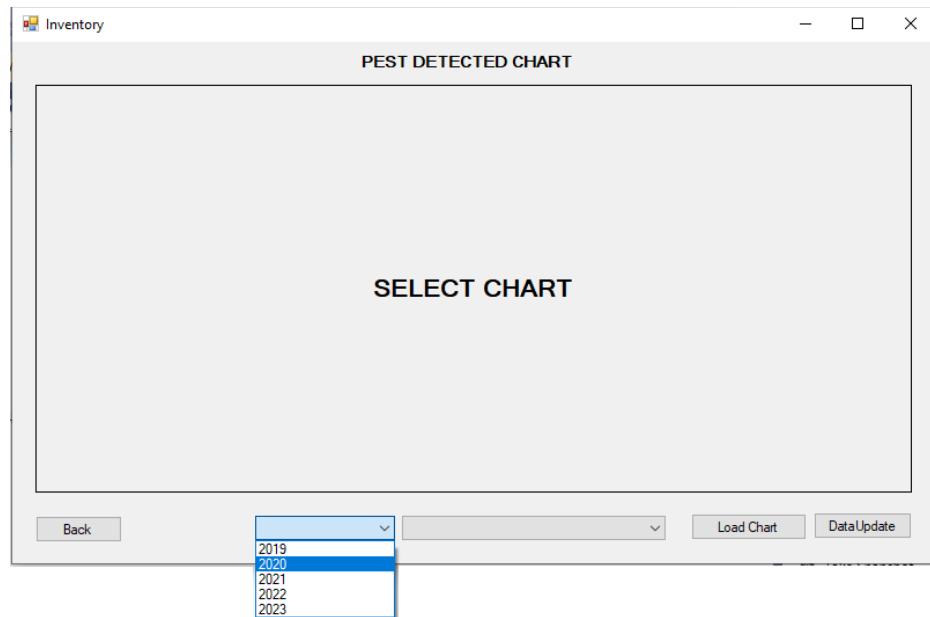


Figure 4.17 Year selection

Users can select the year for the chart that the users want to monitor.

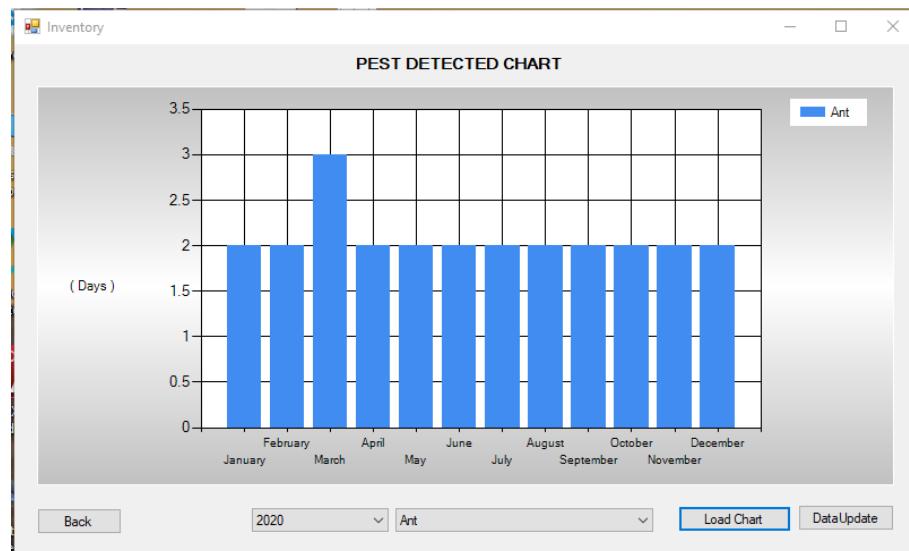


Figure 4.18 Example of Graph

This is the example of the chart that recorded in year 2020. The chart shown by days against month. User can see which month the pest is mostly attack. From this chart, farmer can prepare the type of pesticide that want to use.

The screenshot shows a Windows application window titled "DataUpdate". On the left, there is a form with fields for "Event date" (Day, Month, Year dropdowns) and "Pest Name" (a dropdown set to "Ant"). Below these are buttons for "Delete", "Load Table" (which is highlighted in blue), and "Save". On the right is a data grid table showing pest attack records:

| | Pestname | days | months |
|---|----------|------|----------|
| ▶ | Ant | 12 | January |
| | Ant | 15 | January |
| | Ant | 15 | February |
| | Ant | 10 | February |
| | Ant | 10 | March |
| | Ant | 6 | March |
| | Ant | 6 | April |
| | Ant | 2 | April |

At the bottom right of the window is a "Close" button.

Figure 4.19 Data event update page

Farmers can record the event of the pest attack inside the Data Update page, the data will be stored inside the online database. Users or farmer need an internet excess to save data inside this software. User only need to select the year, month, day, and the type of the pest. Users also able to delete the information from the database.

4.3 Pest Management System implementation

The test was conducted after movement control order at the phase 4, which is more flexible. Without concern, the time when test was conducted, the paddy was already harvested. Therefore, there was no more paddy at that time. However, the test still can be done because of the pest still there to eat the remaining paddy. The result and the discussion were described in the flow below:



Figure 4.20 Install location

The pest trap was placed at the paddy partition, so that, the trap was high enough to trap the pest. After the pest enter the trap, the microwave radar sensor senses the pest and transfer the data to the transmitter. The transmitter then released signal through radio frequency at 27M Hertz to transmit to the receiver.

The receiver then sent the data through cable connector to the monitor. The monitor then popup the signal through the monitor in the figure 4.21.

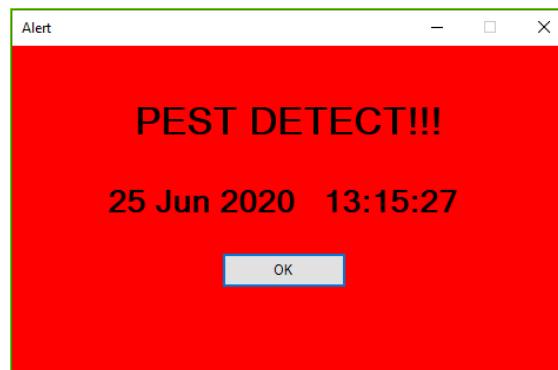


Figure 4.21 Pest Alert

After received the popup signal, the farmer then needs to check the trap to confirm the pest species. To reconfirm the species of the pest, farmer then needs to open the library and match any of the pest picture inside the library in figure 4.22. The read the data about the pest, farmer need to click at the picture of the pest. To be remind, the monitor needs to connect to the internet.

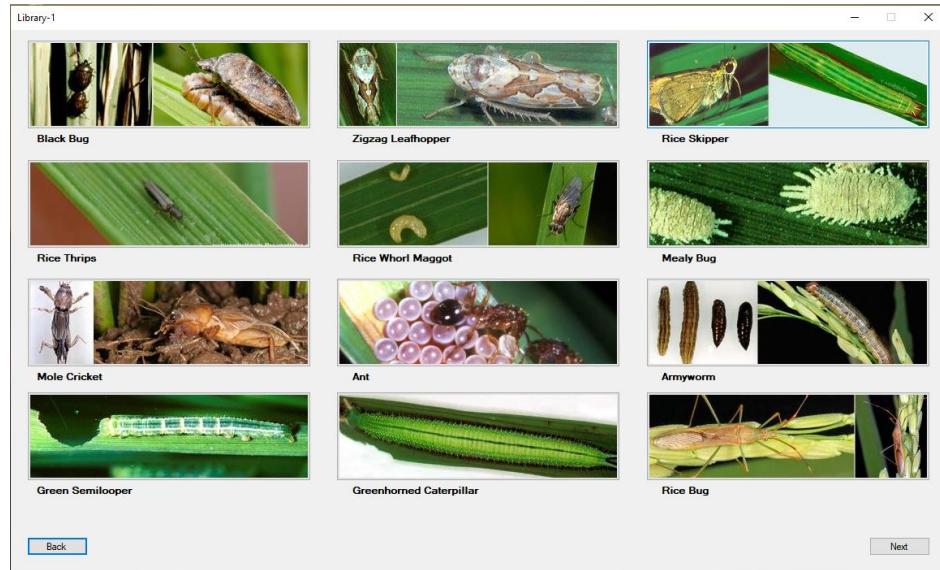


Figure 4.22 Library



Rice bug

The most common species of rice bug are *Leptocoris oratorius* F. and *Leptocoris acuta* Thunberg.

What it does

Rice bugs damage rice by sucking out the contents of developing grains from pre-flowering spikelets to soft dough stage, therefore causing unfilled or empty grains and discoloration. Immature and adult rice bugs both feed on rice grains.

Why and where it occurs

High rice bug populations are brought about by factors such as nearby woodlands, extensive weedy areas near rice fields, wild grasses near canals, and staggered rice planting. The insect also becomes active when the monsoonal rains begin. Warm weather, overcast skies, and frequent drizzles favor its population buildup.

The population of the rice bug increases at the end of the rainy season.

Rice bugs are found in all rice environments. They are more common in rainfed and upland rice and prefer the flowering to milky stages of the rice crop.



Adults are active during the late afternoon and early morning. Under bright sunlight, they hide in grassy areas. They are less active during the dry season. In cooler areas, the adults undergo a prolonged development in grasses. They feed on wild hosts for one to two generations before migrating into the rice fields at the flowering stages. The nymphs are found on the rice plant where they blend with the foliage. There, they are often left unnoticed. When disturbed, the nymphs drop to the lower part of the plants and the adults fly within a short distance.

How to identify

Check the plant for feeding damage, such as

- small or shriveled grains,
- deformed or spotty grains,
- empty grains, and
- erect panicles.

The symptoms can be confused with the damage caused by nutrient deficiency or flower thrips. To confirm rice bug infestation, check for presence of insect:

- oval, shiny, and reddish brown eggs along midrib of leaf



Why is it important

Both the adults and nymphs feed on grains at the milking stage. They can be serious pests of rice and sometimes reduce yield by as much as 30%.

How to manage

- Remove weeds from fields and surrounding areas to prevent the multiplication of rice bugs during fallow periods.
- Level fields with even applications of fertilizer and water encourage rice to grow and develop at the same rate. Planting fields, within a village, at the same time (synchronous planting) also helps reduce rice bug problems.
- Capturing rice bugs, in the early morning or late afternoon, by net can be effective at low rice bug densities, though labor intensive.
- Encourage biological control agents: Some wasps, grasshoppers and spiders attack rice bugs or rice bug eggs. Indiscriminate insecticide use disrupts biological control, resulting in pest resurgence.

For chemical control

Before using a pesticide contact a crop protection specialist for suggestions, guidance, and warnings specific to your situation.

- Begin scouting the field at pre-flowering and continue daily until the hard dough stage. Count rice bugs in the early morning or late afternoon from 20 hills while walking diagonally across a transplanted field. Adults often fly out of the way before you reach the rice plant, so counts may only reveal immature forms. Direct control may be required if there are more than 10 rice bugs/20 hills.
- The choice of insecticide depends on many factors such as the application equipment available, cost of the insecticide, experience of the applicator, or presence of fish. The benefits of using an insecticide must be weighed against the risks to health and the environment.

Content expert: Jo Catindig (email: j.catindig@irri.org)

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IRRI

Figure 4.24 IRRI Website page 2

After the picture inside the library was clicked, the website of International Rice Research Institute (IRRI) [6] figure 4.23 and figure 4.24 were opened. Inside the website, the farmer able to know the information about the pest, and how to manage the pest. The farmer then able to know how to manage the pest by naturally or using pesticide. This made the first objective was achieved, which is to reduce utilization of pesticide which is hazardous to the farmers.

Inside the homepage of the software figure 4.25, farmer then need to select inventory to record the data event of the pest attack at the “Data Update” button inside the Inventory refer figure 4.30.

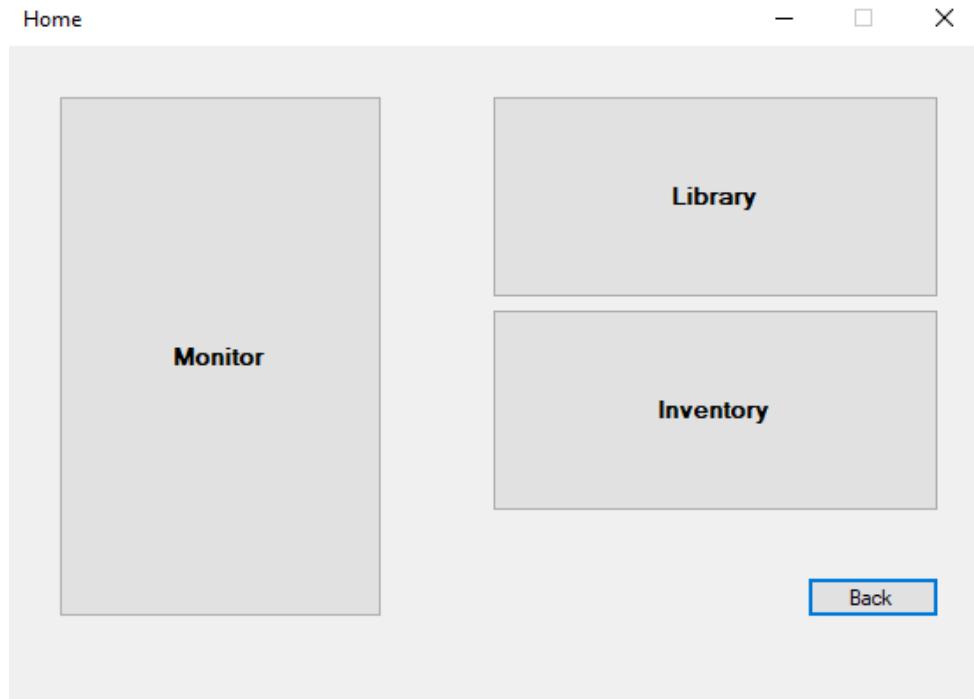


Figure 4.25 Monitoring page

After the Data Update form was opened, farmer need to key in the data to record the event attack. Farmer only to select the list of the day, month, year, and the type of the pest name. In this situation, the date was 25th June 2020, and the pest name was Rice Bug figure 4.26.

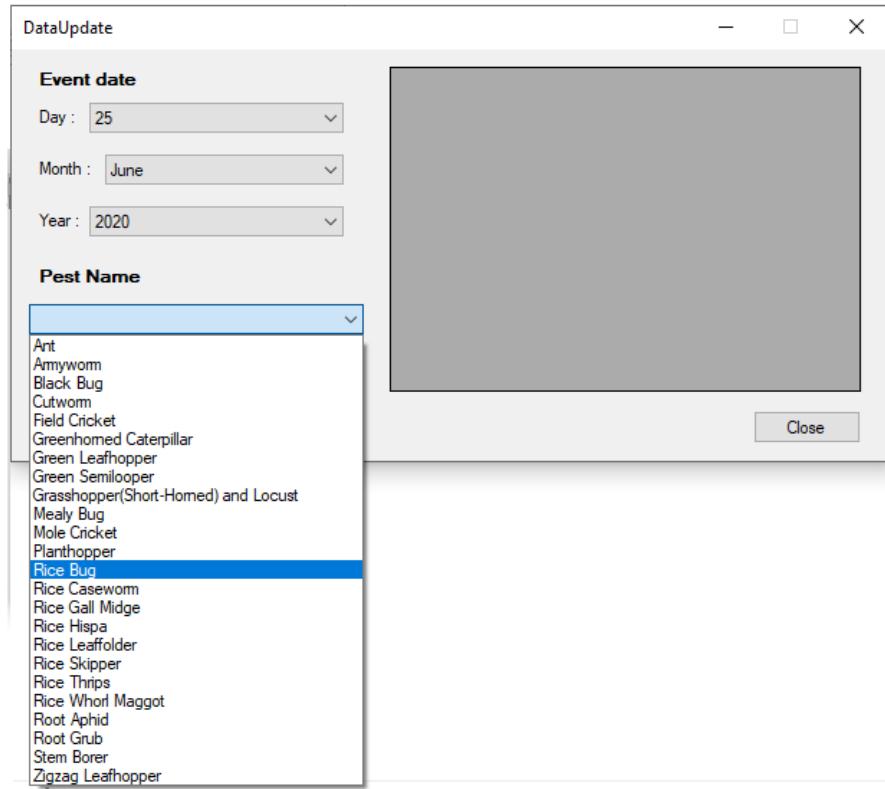


Figure 4.26 Data Update

Farmer then need to click “Save” button and the message save will popup figure 4.27. To be remind, farmer also need an internet connection to record the data into the database.

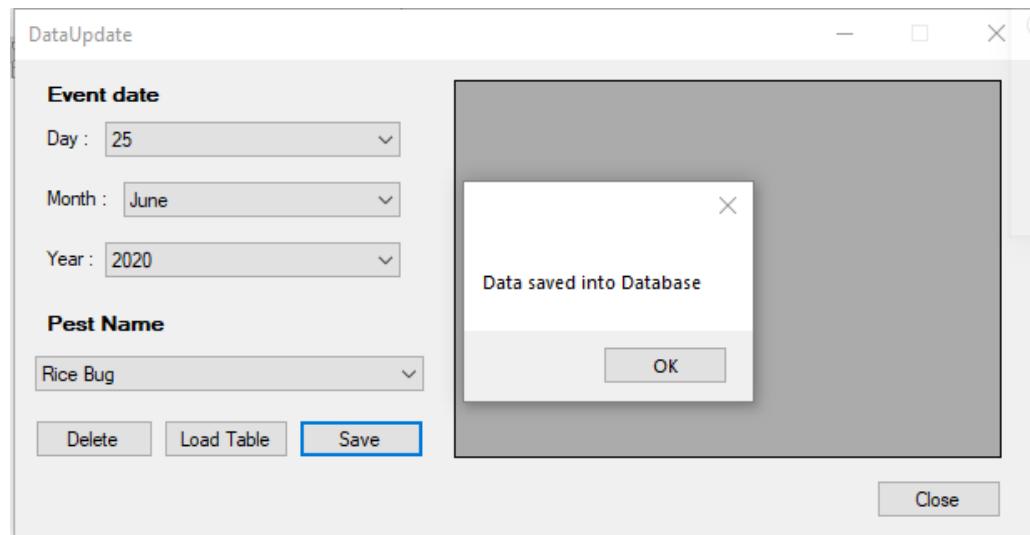


Figure 4.27 Save data instruction

Next, to check the record, “Load Table” button need to click to check the record figure 4.28.

| | Pestname | days | months |
|---|----------|------|--------|
| ▶ | Rice Bug | 25 | June |
| * | | | |

Figure 4.28 Table loading instruction

To delete the data from the database, select the event inside the table and then click the “Delete” button and the popup confirmation will open figure 4.29. The data will be deleted instantly when the “Delete” button is click. Then, click the “Load Table” button to double check the data.

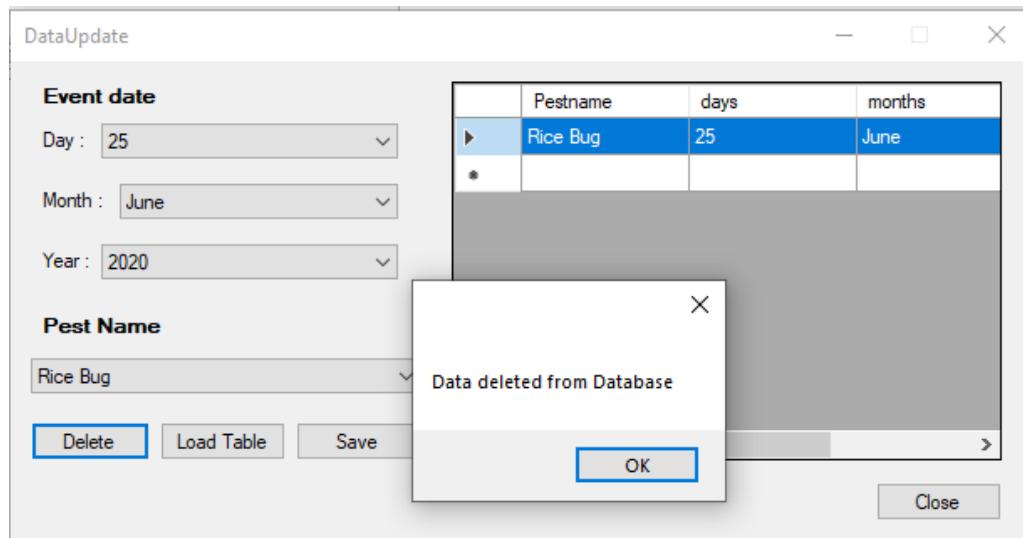


Figure 4.29 Data delete instruction

Then open the inventory to see the past detected chart of any pest involve figure 4.30. Select the year and type of pest at the bottom of the form and Load to review the chart.

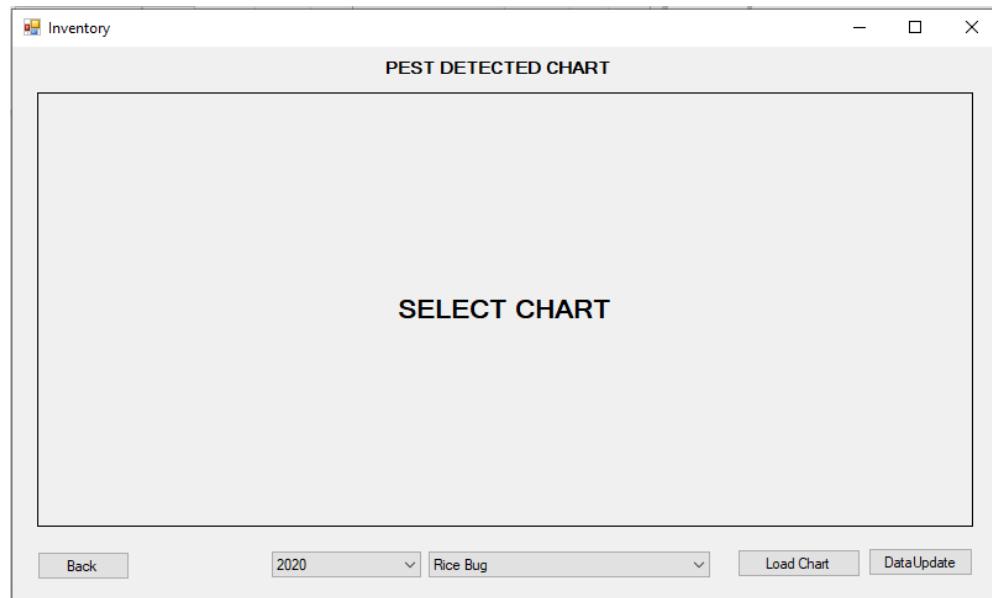


Figure 4.30 Inventory page

The chart will show in days by month after “Load Chart” button was click. Farmer then able to analyze the data event.

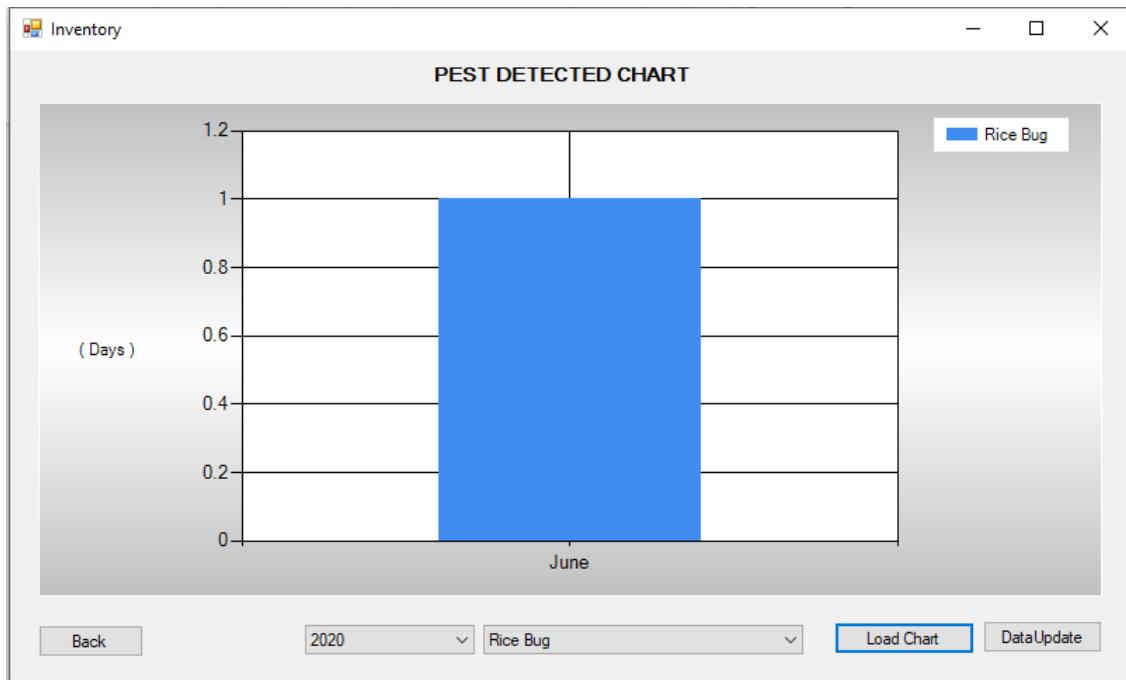


Figure 131 Rice Bug Chart

To check the other type of pest, select the type of pest and then click “Load Chart” button again and the chart will open figure 4.32. By using this software, the warmer able to secure the data online. Farmer able to clearly see the chart of the pest attack and manually reduce the pest attack by refer to the library. The table data will automatically convert into chart, so that it easy for farmer to analyze the effectiveness of the pesticide or the natural control. This software made the second and third objective was achieved, which is to build a software system that are more reliable for farmer. And, to reduce loss and damage that made by pest.

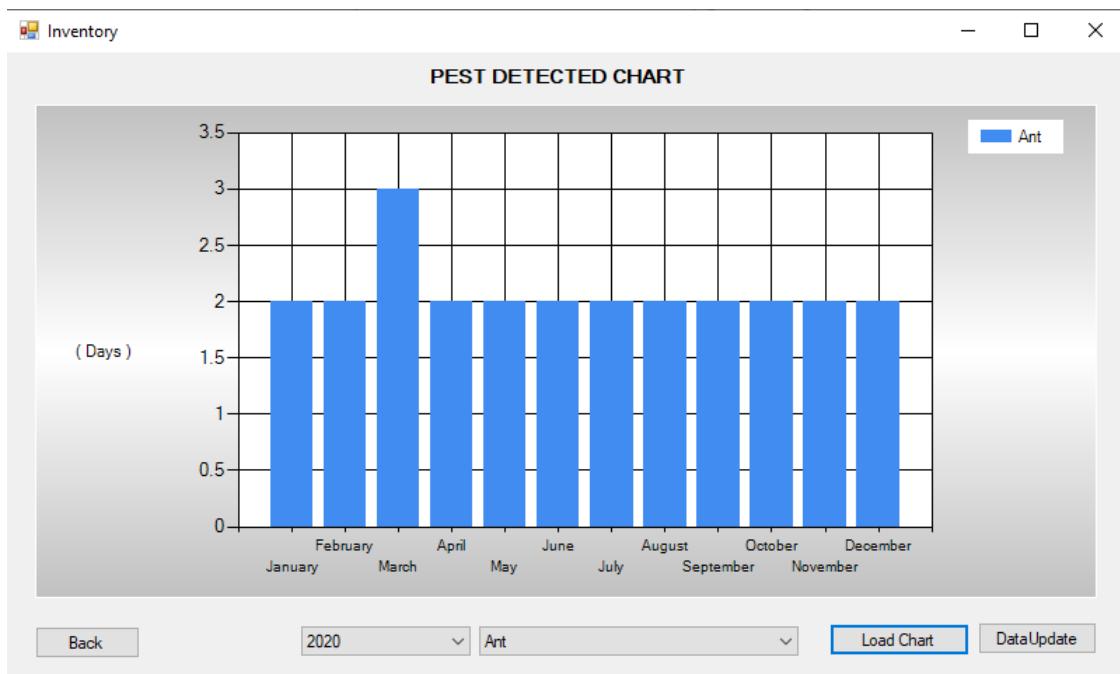


Figure 4.32 Ant Chart

4.4 Chapter Summary

In this chapter, analysis of the prototype has been discussed thoroughly from troubleshooting to developing prototype. The results in which have been observed and collected from the testing of prototype and all the objective was achieved. Which is in the point below:

- To reduce utilization of pesticide which is hazardous to the farmers.
- To build a software system that are more reliable for farmer.
- To reduce loss and damage that made by pest.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Referring to the previous chapter, the objectives of this project must be completed to make it success. The main objectives of this project are to reduce loss and damage that came from paddy hopper. To avoid this case, happen they need to use hopper repelled. The function of this project is to detect the paddy hopper that came to the paddy field. To detect the paddy hopper is use the transmission and receiver.

This project is a combination of transmitter and receiver and personal computer. The function of transmitter for this project is to send data each time the pest was detected than the receiver will receive the data. The receiver will send data to the computer and stored the data because data storage is most important to ensure this project is working as plan.

5.2 Conclusions

To be summarized, all three objectives was achieved. this system is suggested to farmers to use to efficiently manage the pests. However, by using this system, the farmer also can analyze the frequent pest attack according to the season or monthly. This also helps the farmer to predict the attacking of the pests in the future.

5.3 Future recommendation

This system basically uses for pest management, it can be used to reduce the using of pesticide by analyzing the data from the software. This software is useful for farmer to manage the pest, but it cannot eliminate the pest efficiently. However, bigger size of supply can be installed to maintain the monitoring longer. To efficiently monitor the pest, visual aids need to install inside the trap so that farmer able the check inside the trap only by using the software. The visual aids that can be use such as camera video or Pest Recognition Artificial Intelligent.

REFERENCES

- [1] M. P. Ali, M. N. Bari, S. S. Haque, M. M. M. Kabir, S. Afrin, F. Nowrin, M. S. Islam, D. A. Landis Sci Rep. 2019; 9: 10180. Published online 2019 Jul 15. doi: 10.1038/s41598-019-46688-6
- [2] Ismail Hashim Yahaya, (26August 2019) Generasi Digital, Milenium Kunci Pertanian Pintar. Malaysia: Berita Harian pg.10
- [3] Chaturvedi, M., Sharma, C., & Tiwari, M. (2013). Effects of pesticides on human beings and farm animals: A case study. Research Journal of Chemical and Environmental Sciences, 1(3), 14-19.
- [4] Miah, S. J., Hoque, A., Paul, A., & Rahman, A. (2014). Unsafe use of pesticide and its impact on health of farmers: A case study in Burichong Upazila, Bangladesh. cancer, 21, 22.
- [5] Beg, Mirza, (3 January 2017). Book: Pesticides Toxicity Specificity & Politics Chapter 1: Introduction. Doi:10.13140/RG.2.2.32658.66244
- [6] Rice bug. (n.d.). Retrieved June 25, 2020, from
<http://www.knowledgebank.irri.org/training/fact-sheets/pest-management/insects/item/rice-bug>
- [7] Carpenter, P. (2019). Understanding Radio Control Gear. Retrieved September 30, 2019, from <https://www.rc-airplane-world.com/radio-control-gear.html>

APPENDIX A

PROGRAM CODE

I. Alert

```
1. Public Class Alert
2.     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
        Button1.Click
3.         Me.Close()
4.
5.     End Sub
6.
7.     Private Sub Alert_Load(sender As Object, e As EventArgs) Handles
        MyBase.Load
8.         Timer1.Enabled = True
9.
10.    End Sub
11.
12.    Private Sub Timer1_Tick(sender As Object, e As EventArgs) Handles
        Timer1.Tick
13.        Label2.Text = Date.Now.ToString("dd MMM yyyy    HH:mm:ss")
14.        Timer1.Stop()
15.    End Sub
16. End Class
```

II. Apps Info

```
1. Public Class AppsInfo
2.     Private Sub Button2_Click(sender As Object, e As EventArgs) Handles
        Button2.Click
3.         Me.Close()
4.         Login.Show()
5.
6.     End Sub
7.
8.     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
        Button1.Click
9.         Me.Close()
10.        Home.Show()
11.
12.    End Sub
13. End Class
```

III. Data Update

```
1. Imports MySql.Data.MySqlClient
2.
3. Public Class DataUpdate
4.     Dim Mysqlconn As MySqlConnection
5.     Dim COMMAND As MySqlCommand
6.
7.     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
Button1.Click
8.         Me.Close()
9.         Inventory.Show()
10.    End Sub
11.
12.    Private Sub DataUpdate_Load(sender As Object, e As EventArgs) Handles
 MyBase.Load
13.
14.        Mysqlconn = New MySqlConnection
15.        Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
16.
17.        Try
18.            Mysqlconn.Open()
19.            MessageBox.Show("Connected into Database")
20.            Mysqlconn.Close()
21.            Catch ex As MySqlException
22.                MessageBox.Show(ex.Message)
23.            Finally
24.                Mysqlconn.Dispose()
25.            End Try
26.        End Sub
27.
28.    Private Sub Button5_Click(sender As Object, e As EventArgs) Handles
Button5.Click
29.        Mysqlconn = New MySqlConnection
30.        Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
31.        Dim SDA As New MySqlDataAdapter
32.        Dim dbDataSet As New DataTable
33.        Dim bSource As New BindingSource
34.
35.        Try
36.            Mysqlconn.Open()
37.            Dim Query As String
38.            Query = "select * from `database`.`year_2020` where pestname='"
39.            ComboBox1.SelectedItem & "'"
40.            COMMAND = New MySqlCommand(Query, Mysqlconn)
41.            SDA.SelectCommand = COMMAND
42.            SDA.Fill(dbDataSet)
43.            bSource.DataSource = dbDataSet
44.            DataGridView1.DataSource = bSource
45.            SDA.Update(dbDataSet)
46.        Mysqlconn.Close()
```

```

47.      Catch ex As MySqlException
48.          MessageBox.Show(ex.Message)
49.      Finally
50.          Mysqlconn.Dispose()
51.      End Try
52.  End Sub
53.
54.  Private Sub Button2_Click(sender As Object, e As EventArgs) Handles
55.    Button2.Click
56.        Mysqlconn = New MySqlConnection
57.        Mysqlconn.ConnectionString =
58.            "server=localhost;userid=root;password=Najib;database=database"
59.        Dim READER As MySqlDataReader
60.
61.        Try
62.            Mysqlconn.Open()
63.            Dim Query As String
64.            Query = "insert into `database`.`year_2020`"
65.            (pestname,days,months,years)
66.            values(''" & ComboBox1.SelectedItem & "','" & ComboBox2.SelectedItem
67.            & "','" & ComboBox3.SelectedItem & "','" & ComboBox4.SelectedItem & ")"
68.            COMMAND = New MySqlCommand(Query, Mysqlconn)
69.            READER = COMMAND.ExecuteReader
70.            MessageBox.Show("Data saved into Database")
71.            Mysqlconn.Close()
72.        Catch ex As MySqlException
73.            MessageBox.Show(ex.Message)
74.        Finally
75.            Mysqlconn.Dispose()
76.        End Try
77.    End Sub
78.
79.  Private Sub Button4_Click(sender As Object, e As EventArgs) Handles
80.    Button4.Click
81.        Mysqlconn = New MySqlConnection
82.        Mysqlconn.ConnectionString =
83.            "server=localhost;userid=root;password=Najib;database=database"
84.        Dim READER As MySqlDataReader
85.
86.        Try
87.            Mysqlconn.Open()
88.            Dim Query As String
89.            Query = "delete from `database`.`year_2020` where pestname=''" &
90.            ComboBox1.SelectedItem & "' AND days=" & ComboBox2.SelectedItem & " AND
91.            months=" & ComboBox3.SelectedItem & "' AND years=" & ComboBox4.SelectedItem &
92.            ""
93.            COMMAND = New MySqlCommand(Query, Mysqlconn)
94.            READER = COMMAND.ExecuteReader
95.            MessageBox.Show("Data deleted from Database")
96.            Mysqlconn.Close()
97.        Catch ex As MySqlException
98.            MessageBox.Show(ex.Message)
99.        Finally
100.            Mysqlconn.Dispose()
101.        End Try
102.    End Sub

```

```
94.  
95.    Private Sub DataGridView1_CellContentClick(sender As Object, e As  
         DataGridViewCellEventArgs) Handles DataGridView1.CellContentClick  
96.        If e.RowIndex >= 0 Then  
97.  
98.            Dim row As DataGridViewRow  
99.            row = Me.DataGridView1.Rows(e.RowIndex)  
100.  
101.            ComboBox1.Text = row.Cells("pestname").Value.ToString  
102.            ComboBox2.Text = row.Cells("days").Value.ToString  
103.            ComboBox3.Text = row.Cells("months").Value.ToString  
104.            ComboBox4.Text = row.Cells("years").Value.ToString  
105.  
106.        End If  
107.    End Sub  
108. End Class
```

IV. Home

```
1. Public Class Home
2.     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
    Button1.Click
3.         Me.Close()
4.         AppsInfo.Show()
5.
6.     End Sub
7.
8.     Private Sub Button2_Click(sender As Object, e As EventArgs) Handles
    Button2.Click
9.         'Me.Close()
10.        Monitoring.Show()
11.
12.    End Sub
13.
14.    Private Sub Button3_Click(sender As Object, e As EventArgs) Handles
    Button3.Click
15.        Me.Close()
16.        Library1.Show()
17.
18.    End Sub
19.
20.    Private Sub Button4_Click(sender As Object, e As EventArgs) Handles
    Button4.Click
21.        Me.Close()
22.        Inventory.Show()
23.
24.    End Sub
25.
26.    Private Sub Home_Load(sender As Object, e As EventArgs) Handles MyBase.Load
27.
28.    End Sub
```

V. Inventory

```
1. Imports MySql.Data.MySqlClient
2. Public Class Inventory
3. Dim Mysqlconn As MySqlConnection
4. Dim COMMAND As MySqlCommand
5. Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
   Button1.Click
6. Me.Close()
7. Home.Show()

8. End Sub

9. Private Sub Button2_Click_1(sender As Object, e As EventArgs) Handles
   Button2.Click
10. Me.Close()
11. DataUpdate.Show()
12. End Sub

13. Private Sub Button3_Click(sender As Object, e As EventArgs) Handles
   Button3.Click
14. If ComboBox1.SelectedItem = "Ant" Then
15. Chart1.BringToFront()
16. End If
17. If ComboBox1.SelectedItem = "Armyworm" Then
18. Chart2.BringToFront()
19. End If
20. If ComboBox1.SelectedItem = "Black Bug" Then
21. Chart3.BringToFront()
22. End If
23. If ComboBox1.SelectedItem = "Cutworm" Then
24. Chart4.BringToFront()
25. End If
26. If ComboBox1.SelectedItem = "Field Cricket" Then
27. Chart5.BringToFront()
28. End If
29. If ComboBox1.SelectedItem = "Greenhorned Caterpillar" Then
30. Chart6.BringToFront()
31. End If
32. If ComboBox1.SelectedItem = "Green Leafhopper" Then
33. Chart7.BringToFront()
34. End If
35. If ComboBox1.SelectedItem = "Green Semilooper" Then
36. Chart8.BringToFront()
37. End If
38. If ComboBox1.SelectedItem = "Grasshopper(Short-Horned) and Locust" Then
39. Chart9.BringToFront()
40. End If
41. If ComboBox1.SelectedItem = "Mealy Bug" Then
42. Chart10.BringToFront()
43. End If
44. If ComboBox1.SelectedItem = "Mole Cricket" Then
45. Chart11.BringToFront()
46. End If
47. If ComboBox1.SelectedItem = "Planthopper" Then
48. Chart12.BringToFront()
```

```

49. End If
50. If ComboBox1.SelectedItem = "Rice Bug" Then
51. Chart13.BringToFront()
52. End If
53. If ComboBox1.SelectedItem = "Rice Caseworm" Then
54. Chart14.BringToFront()
55. End If
56. If ComboBox1.SelectedItem = "Rice Gall Midge" Then
57. Chart15.BringToFront()
58. End If
59. If ComboBox1.SelectedItem = "Rice Hispa" Then
60. Chart16.BringToFront()
61. End If
62. If ComboBox1.SelectedItem = "Rice Leaffolder" Then
63. Chart17.BringToFront()
64. End If
65. If ComboBox1.SelectedItem = "Rice Skipper" Then
66. Chart18.BringToFront()
67. End If
68. If ComboBox1.SelectedItem = "Rice Thrips" Then
69. Chart19.BringToFront()
70. End If
71. If ComboBox1.SelectedItem = "Rice Whorl Maggot" Then
72. Chart20.BringToFront()
73. End If
74. If ComboBox1.SelectedItem = "Root Aphid" Then
75. Chart21.BringToFront()
76. End If
77. If ComboBox1.SelectedItem = "Root Grub " Then
78. Chart22.BringToFront()
79. End If
80. If ComboBox1.SelectedItem = "Stem Borer" Then
81. Chart23.BringToFront()
82. End If
83. If ComboBox1.SelectedItem = "Zigzag Leafhopper" Then
84. Chart24.BringToFront()
85. End If
86. End Sub
87.
88.     Private Sub Chart1_Click(sender As Object, e As EventArgs) Handles
Chart1.Click
89.         Mysqlconn = New MySqlConnection
90.         Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
91.         Dim READER As MySqlDataReader
92.
93.         Try
94.             Mysqlconn.Open()
95.             Dim Query As String
96.             Query = "SELECT months, count(*) as 'days'
97.                     FROM year_2020
98.                     WHERE pestname=' " & ComboBox1.SelectedItem & " '
99.                     AND years=" & ComboBox2.SelectedItem & "
100.                         GROUP BY months
101.                         LIMIT 12 ;"
102.             COMMAND = New MySqlCommand(Query, Mysqlconn)
103.             READER = COMMAND.ExecuteReader
104.             While READER.Read

```

```

105.      Chart1.Series("Ant").Points.AddXY(READER.GetString("months"),
106.                                              READER.GetString("days"))
107.          End While
108.          Mysqlconn.Close()
109.      Catch ex As MySqlException
110.          MessageBox.Show(ex.Message)
111.      Finally
112.          Mysqlconn.Dispose()
113.      End Try
114.  End Sub
115.  Private Sub Chart2_Click(sender As Object, e As EventArgs) Handles
116.      Chart2.Click
117.          Mysqlconn = New MySqlConnection
118.          Mysqlconn.ConnectionString =
119.              "server=localhost;userid=root;password=Najib;database=database"
120.          Dim READER As MySqlDataReader
121.          Try
122.              Mysqlconn.Open()
123.              Dim Query As String
124.              Query = "SELECT months, count(*) as 'days'
125.                      FROM year_2020
126.                      WHERE pestname=' " & ComboBox1.SelectedItem & "'"
127.                      AND years=" & ComboBox2.SelectedItem & "
128.                      GROUP BY months
129.                      LIMIT 12 ;"
130.              COMMAND = New MySqlCommand(Query, Mysqlconn)
131.              READER = COMMAND.ExecuteReader
132.              While READER.Read
133.                  Chart2.Series("Armyworm").Points.AddXY(READER.GetString("months"),
134.                                              READER.GetString("days"))
135.              End While
136.              Mysqlconn.Close()
137.          Catch ex As MySqlException
138.              MessageBox.Show(ex.Message)
139.          Finally
140.              Mysqlconn.Dispose()
141.          End Try
142.  End Sub
143.  Private Sub Chart3_Click(sender As Object, e As EventArgs) Handles
144.      Chart3.Click
145.          Mysqlconn = New MySqlConnection
146.          Mysqlconn.ConnectionString =
147.              "server=localhost;userid=root;password=Najib;database=database"
148.          Dim READER As MySqlDataReader
149.          Try
150.              Mysqlconn.Open()
151.              Dim Query As String
152.              Query = "SELECT months, count(*) as 'days'
153.                      FROM year_2020
154.                      WHERE pestname=' " & ComboBox1.SelectedItem & "'"
155.                      AND years=" & ComboBox2.SelectedItem & "
156.                      GROUP BY months

```

```

155.           LIMIT 12 ;"
156.           COMMAND = New MySqlCommand(Query, Mysqlconn)
157.           READER = COMMAND.ExecuteReader
158.           While READER.Read
159.               Chart3.Series("Black
Bug").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
160.           End While
161.           Mysqlconn.Close()
162.           Catch ex As MySqlException
163.               MessageBox.Show(ex.Message)
164.           Finally
165.               Mysqlconn.Dispose()
166.           End Try
167.       End Sub
168.
169.   Private Sub Chart4_Click(sender As Object, e As EventArgs) Handles
Chart4.Click
170.       Mysqlconn = New MySqlConnection
171.       Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
172.       Dim READER As MySqlDataReader
173.
174.       Try
175.           Mysqlconn.Open()
176.           Dim Query As String
177.           Query = "SELECT months, count(*) as 'days'
178.                   FROM year_2020
179.                   WHERE pestname=' " & ComboBox1.SelectedItem & "'"
180.                   AND years=" & ComboBox2.SelectedItem & "
181.                   GROUP BY months
182.                   LIMIT 12 ;"
183.           COMMAND = New MySqlCommand(Query, Mysqlconn)
184.           READER = COMMAND.ExecuteReader
185.           While READER.Read
186.
Chart4.Series("Cutworm").Points.AddXY(READER.GetString("months"),
READER.GetString("days"))
187.           End While
188.           Mysqlconn.Close()
189.           Catch ex As MySqlException
190.               MessageBox.Show(ex.Message)
191.           Finally
192.               Mysqlconn.Dispose()
193.           End Try
194.       End Sub
195.
196.   Private Sub Chart5_Click(sender As Object, e As EventArgs) Handles
Chart5.Click
197.       Mysqlconn = New MySqlConnection
198.       Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
199.       Dim READER As MySqlDataReader
200.
201.       Try
202.           Mysqlconn.Open()
203.           Dim Query As String
204.           Query = "SELECT months, count(*) as 'days'
205.                   FROM year_2020

```

```

206.          WHERE pestname=''' & ComboBox1.SelectedItem & '''
207.          AND years=" & ComboBox2.SelectedItem & "
208.          GROUP BY months
209.          LIMIT 12 ;"
210.          COMMAND = New MySqlCommand(Query, Mysqlconn)
211.          READER = COMMAND.ExecuteReader
212.          While READER.Read
213.              Chart5.Series("Field
214.                  Cricket").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
215.          End While
216.          Mysqlconn.Close()
217.          Catch ex As MySqlException
218.              MessageBox.Show(ex.Message)
219.          Finally
220.              Mysqlconn.Dispose()
221.          End Try
222.      End Sub
223.      Private Sub Chart6_Click(sender As Object, e As EventArgs) Handles
224.          Chart6.Click
225.          Mysqlconn = New MySqlConnection
226.          Mysqlconn.ConnectionString =
227.              "server=localhost;userid=root;password=Najib;database=database"
228.          Dim READER As MySqlDataReader
229.          Try
230.              Mysqlconn.Open()
231.              Dim Query As String
232.              Query = "SELECT months, count(*) as 'days'
233.                      FROM year_2020
234.                      WHERE pestname=''' & ComboBox1.SelectedItem & '''
235.                      AND years=" & ComboBox2.SelectedItem & "
236.                      GROUP BY months
237.                      LIMIT 12 ;"
238.              COMMAND = New MySqlCommand(Query, Mysqlconn)
239.              READER = COMMAND.ExecuteReader
240.              While READER.Read
241.                  Chart6.Series("Greenhorned
242.                      Caterpillar").Points.AddXY(READER.GetString("months"),
243.                          READER.GetString("days"))
244.              End While
245.              Mysqlconn.Close()
246.              Catch ex As MySqlException
247.                  MessageBox.Show(ex.Message)
248.              Finally
249.                  Mysqlconn.Dispose()
250.              End Try
251.          End Sub
252.          Private Sub Chart7_Click(sender As Object, e As EventArgs) Handles
253.              Chart7.Click
254.              Mysqlconn = New MySqlConnection
255.              Mysqlconn.ConnectionString =
256.                  "server=localhost;userid=root;password=Najib;database=database"

```

```

257.         Dim Query As String
258.         Query = "SELECT months, count(*) as 'days'
259.                 FROM year_2020
260.                 WHERE pestname='"
261.                     & ComboBox1.SelectedItem & "'"
262.                     AND years='"
263.                         & ComboBox2.SelectedItem & "'"
264.                         GROUP BY months
265.                         LIMIT 12 ;"
266. COMMAND = New MySqlCommand(Query, Mysqlconn)
267. READER = COMMAND.ExecuteReader
268. While READER.Read
269.     Chart7.Series("Green
270. Leafhopper").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
271. End While
272. Mysqlconn.Close()
273. Catch ex As MySqlException
274.     MessageBox.Show(ex.Message)
275. Finally
276.     Mysqlconn.Dispose()
277. End Try
278. End Sub
279. Private Sub Chart8_Click(sender As Object, e As EventArgs) Handles
280. Chart8.Click
281.     Mysqlconn = New MySqlConnection
282.     Mysqlconn.ConnectionString =
283.         "server=localhost;userid=root;password=Najib;database=database"
284.     Dim READER As MySqlDataReader
285.     Try
286.         Mysqlconn.Open()
287.         Dim Query As String
288.         Query = "SELECT months, count(*) as 'days'
289.                 FROM year_2020
290.                 WHERE pestname='"
291.                     & ComboBox1.SelectedItem & "'"
292.                     AND years='"
293.                         & ComboBox2.SelectedItem & "'"
294.                         GROUP BY months
295.                         LIMIT 12 ;"
296. COMMAND = New MySqlCommand(Query, Mysqlconn)
297. READER = COMMAND.ExecuteReader
298. While READER.Read
299.     Chart8.Series("Green
300. Semilooper").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
301. End While
302. Mysqlconn.Close()
303. Catch ex As MySqlException
304.     MessageBox.Show(ex.Message)
305. Finally
306.     Mysqlconn.Dispose()
307. End Try
308. End Sub
309. Private Sub Chart9_Click(sender As Object, e As EventArgs) Handles
310. Chart9.Click
311.     Mysqlconn = New MySqlConnection
312.     Mysqlconn.ConnectionString =
313.         "server=localhost;userid=root;password=Najib;database=database"
314.     Dim READER As MySqlDataReader

```

```

309.      Try
310.          Mysqlconn.Open()
311.          Dim Query As String
312.          Query = "SELECT months, count(*) as 'days'
313.                  FROM year_2020
314.                  WHERE pestname=''" & ComboBox1.SelectedItem & ""
315.                  AND years=" & ComboBox2.SelectedItem & "
316.                  GROUP BY months
317.                  LIMIT 12 ;"
318.          COMMAND = New MySqlCommand(Query, Mysqlconn)
319.          READER = COMMAND.ExecuteReader
320.          While READER.Read
321.              Chart9.Series("Grasshopper(Short-Horned) and
322. Locust").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
323.          End While
324.          Mysqlconn.Close()
325.          Catch ex As MySqlException
326.              MessageBox.Show(ex.Message)
327.          Finally
328.              Mysqlconn.Dispose()
329.          End Try
330.      End Sub
331.      Private Sub Chart10_Click(sender As Object, e As EventArgs) Handles
332. Chart10.Click
333.          Mysqlconn = New MySqlConnection
334.          Mysqlconn.ConnectionString =
335.          "server=localhost;userid=root;password=Najib;database=database"
336.          Dim READER As MySqlDataReader
337.          Try
338.              Mysqlconn.Open()
339.              Dim Query As String
340.              Query = "SELECT months, count(*) as 'days'
341.                      FROM year_2020
342.                      WHERE pestname=''" & ComboBox1.SelectedItem & ""
343.                      AND years=" & ComboBox2.SelectedItem & "
344.                      GROUP BY months
345.                      LIMIT 12 ;"
346.              COMMAND = New MySqlCommand(Query, Mysqlconn)
347.              READER = COMMAND.ExecuteReader
348.              While READER.Read
349.                  Chart10.Series("Mealy
350. Bug").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
351.              End While
352.              Mysqlconn.Close()
353.              Catch ex As MySqlException
354.                  MessageBox.Show(ex.Message)
355.              Finally
356.                  Mysqlconn.Dispose()
357.              End Try
358.          End Sub
359.          Private Sub Chart11_Click(sender As Object, e As EventArgs) Handles
360. Chart11.Click
361.          Mysqlconn = New MySqlConnection
362.          Mysqlconn.ConnectionString =
363.          "server=localhost;userid=root;password=Najib;database=database"

```

```

361.      Dim READER As MySqlDataReader
362.
363.      Try
364.          Mysqlconn.Open()
365.          Dim Query As String
366.          Query = "SELECT months, count(*) as 'days'
367.                  FROM year_2020
368.                  WHERE pestname=''" & ComboBox1.SelectedItem & ""
369.                  AND years=" & ComboBox2.SelectedItem & "
370.                  GROUP BY months
371.                  LIMIT 12 ;"
372.          COMMAND = New MySqlCommand(Query, Mysqlconn)
373.          READER = COMMAND.ExecuteReader
374.          While READER.Read
375.              Chart11.Series("Mole
Cricket").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
376.          End While
377.          Mysqlconn.Close()
378.          Catch ex As MySqlException
379.              MessageBox.Show(ex.Message)
380.          Finally
381.              Mysqlconn.Dispose()
382.          End Try
383.      End Sub
384.
385.      Private Sub Chart12_Click(sender As Object, e As EventArgs) Handles
Chart12.Click
386.          Mysqlconn = New MySqlConnection
387.          Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
388.          Dim READER As MySqlDataReader
389.
390.          Try
391.              Mysqlconn.Open()
392.              Dim Query As String
393.              Query = "SELECT months, count(*) as 'days'
394.                      FROM year_2020
395.                      WHERE pestname=''" & ComboBox1.SelectedItem & ""
396.                      AND years=" & ComboBox2.SelectedItem & "
397.                      GROUP BY months
398.                      LIMIT 12 ;"
399.              COMMAND = New MySqlCommand(Query, Mysqlconn)
400.              READER = COMMAND.ExecuteReader
401.              While READER.Read
402.
Chart12.Series("Planthopper").Points.AddXY(READER.GetString("months"),
READER.GetString("days"))
403.              End While
404.              Mysqlconn.Close()
405.              Catch ex As MySqlException
406.                  MessageBox.Show(ex.Message)
407.              Finally
408.                  Mysqlconn.Dispose()
409.              End Try
410.          End Sub
411.
412.      Private Sub Chart13_Click(sender As Object, e As EventArgs) Handles
Chart13.Click

```

```

413.      Mysqlconn = New MySqlConnection
414.      Mysqlconn.ConnectionString =
415.          "server=localhost;userid=root;password=Najib;database=database"
416.          Dim READER As MySqlDataReader
417.
418.      Try
419.          Mysqlconn.Open()
420.          Dim Query As String
421.          Query = "SELECT months, count(*) as 'days'
422.                  FROM year_2020
423.                  WHERE pestname='"
424.                      & ComboBox1.SelectedItem & "'"
425.                      AND years='"
426.                          & ComboBox2.SelectedItem & "'"
427.                          GROUP BY months
428.                          LIMIT 12 ;"
429.          COMMAND = New MySqlCommand(Query, Mysqlconn)
430.          READER = COMMAND.ExecuteReader
431.          While READER.Read
432.              Chart13.Series("Rice
433.                  Bug").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
434.          End While
435.          Mysqlconn.Close()
436.      Catch ex As MySqlException
437.          MessageBox.Show(ex.Message)
438.      Finally
439.          Mysqlconn.Dispose()
440.      End Try
441.  End Sub
442.
443.  Private Sub Chart14_Click(sender As Object, e As EventArgs) Handles
444.      Chart14.Click
445.          Mysqlconn = New MySqlConnection
446.          Mysqlconn.ConnectionString =
447.              "server=localhost;userid=root;password=Najib;database=database"
448.              Dim READER As MySqlDataReader
449.
450.          Try
451.              Mysqlconn.Open()
452.              Dim Query As String
453.              Query = "SELECT months, count(*) as 'days'
454.                      FROM year_2020
455.                      WHERE pestname='"
456.                          & ComboBox1.SelectedItem & "'"
457.                          AND years='"
458.                              & ComboBox2.SelectedItem & "'"
459.                              GROUP BY months
460.                              LIMIT 12 ;"
461.              COMMAND = New MySqlCommand(Query, Mysqlconn)
462.              READER = COMMAND.ExecuteReader
463.              While READER.Read
464.                  Chart14.Series("Rice
465.                      Caseworm").Points.AddXY(READER.GetString("months"), READER.GetString("days"))

```

```

466.      Private Sub Chart15_Click(sender As Object, e As EventArgs) Handles
467.          Chart15.Click
468.              Mysqlconn = New MySqlConnection
469.              Mysqlconn.ConnectionString =
470.                  "server=localhost;userid=root;password=Najib;database=database"
471.              Dim READER As MySqlDataReader
472.              Try
473.                  Mysqlconn.Open()
474.                  Dim Query As String
475.                  Query = "SELECT months, count(*) as 'days'
476.                          FROM year_2020
477.                          WHERE pestname=''" & ComboBox1.SelectedItem & ""
478.                          AND years=" & ComboBox2.SelectedItem & "
479.                          GROUP BY months
480.                          LIMIT 12 ;"
481.                  COMMAND = New MySqlCommand(Query, Mysqlconn)
482.                  READER = COMMAND.ExecuteReader
483.                  While READER.Read
484.                      Chart15.Series("Rice Gall
485. Midge").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
486.                  End While
487.                  Mysqlconn.Close()
488.                  Catch ex As MySqlException
489.                      MessageBox.Show(ex.Message)
490.                  Finally
491.                      Mysqlconn.Dispose()
492.                  End Try
493.              End Sub
494.              Private Sub Chart16_Click(sender As Object, e As EventArgs) Handles
495.                  Chart16.Click
496.                      Mysqlconn = New MySqlConnection
497.                      Mysqlconn.ConnectionString =
498.                          "server=localhost;userid=root;password=Najib;database=database"
499.                      Dim READER As MySqlDataReader
500.                      Try
501.                          Mysqlconn.Open()
502.                          Dim Query As String
503.                          Query = "SELECT months, count(*) as 'days'
504.                                  FROM year_2020
505.                                  WHERE pestname=''" & ComboBox1.SelectedItem & ""
506.                                  AND years=" & ComboBox2.SelectedItem & "
507.                                  GROUP BY months
508.                                  LIMIT 12 ;"
509.                          COMMAND = New MySqlCommand(Query, Mysqlconn)
510.                          READER = COMMAND.ExecuteReader
511.                          While READER.Read
512.                              Chart16.Series("Rice
513. Hispa").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
514.                          End While
515.                          Mysqlconn.Close()
516.                          Catch ex As MySqlException
517.                              MessageBox.Show(ex.Message)
518.                          Finally
519.                              Mysqlconn.Dispose()
520.                          End Try

```

```

518.      End Sub
519.
520.      Private Sub Chart17_Click(sender As Object, e As EventArgs) Handles
Chart17.Click
521.          Mysqlconn = New MySqlConnection
522.          Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
523.          Dim READER As MySqlDataReader
524.
525.          Try
526.              Mysqlconn.Open()
527.              Dim Query As String
528.              Query = "SELECT months, count(*) as 'days'
529.                      FROM year_2020
530.                      WHERE pestname=' " & ComboBox1.SelectedItem & " '
531.                      AND years=" & ComboBox2.SelectedItem & "
532.                      GROUP BY months
533.                      LIMIT 12 ;"
534.              COMMAND = New MySqlCommand(Query, Mysqlconn)
535.              READER = COMMAND.ExecuteReader
536.              While READER.Read
537.                  Chart17.Series("Rice
Leaffolder").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
538.              End While
539.              Mysqlconn.Close()
540.          Catch ex As MySqlException
541.              MessageBox.Show(ex.Message)
542.          Finally
543.              Mysqlconn.Dispose()
544.          End Try
545.      End Sub
546.
547.      Private Sub Chart18_Click(sender As Object, e As EventArgs) Handles
Chart18.Click
548.          Mysqlconn = New MySqlConnection
549.          Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
550.          Dim READER As MySqlDataReader
551.
552.          Try
553.              Mysqlconn.Open()
554.              Dim Query As String
555.              Query = "SELECT months, count(*) as 'days'
556.                      FROM year_2020
557.                      WHERE pestname=' " & ComboBox1.SelectedItem & " '
558.                      AND years=" & ComboBox2.SelectedItem & "
559.                      GROUP BY months
560.                      LIMIT 12 ;"
561.              COMMAND = New MySqlCommand(Query, Mysqlconn)
562.              READER = COMMAND.ExecuteReader
563.              While READER.Read
564.                  Chart18.Series("Rice
Skipper").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
565.              End While
566.              Mysqlconn.Close()
567.          Catch ex As MySqlException
568.              MessageBox.Show(ex.Message)
569.          Finally

```

```

570.           Mysqlconn.Dispose()
571.       End Try
572.   End Sub
573.
574.   Private Sub Chart19_Click(sender As Object, e As EventArgs) Handles
Chart19.Click
575.       Mysqlconn = New MySqlConnection
576.       Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
577.       Dim READER As MySqlDataReader
578.
579.       Try
580.           Mysqlconn.Open()
581.           Dim Query As String
582.           Query = "SELECT months, count(*) as 'days'
583.                   FROM year_2020
584.                   WHERE pestname=' " & ComboBox1.SelectedItem & "'"
585.                   AND years=" & ComboBox2.SelectedItem & "
586.                   GROUP BY months
587.                   LIMIT 12 ;"
588.           COMMAND = New MySqlCommand(Query, Mysqlconn)
589.           READER = COMMAND.ExecuteReader
590.           While READER.Read
591.               Chart19.Series("Rice
Thrips").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
592.           End While
593.           Mysqlconn.Close()
594.           Catch ex As MySqlException
595.               MessageBox.Show(ex.Message)
596.           Finally
597.               Mysqlconn.Dispose()
598.           End Try
599.   End Sub
600.
601.   Private Sub Chart20_Click(sender As Object, e As EventArgs) Handles
Chart20.Click
602.       Mysqlconn = New MySqlConnection
603.       Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
604.       Dim READER As MySqlDataReader
605.
606.       Try
607.           Mysqlconn.Open()
608.           Dim Query As String
609.           Query = "SELECT months, count(*) as 'days'
610.                   FROM year_2020
611.                   WHERE pestname=' " & ComboBox1.SelectedItem & "'"
612.                   AND years=" & ComboBox2.SelectedItem & "
613.                   GROUP BY months
614.                   LIMIT 12 ;"
615.           COMMAND = New MySqlCommand(Query, Mysqlconn)
616.           READER = COMMAND.ExecuteReader
617.           While READER.Read
618.               Chart20.Series("Rice Whorl
Maggot").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
619.           End While
620.           Mysqlconn.Close()
621.           Catch ex As MySqlException

```

```

622.             MessageBox.Show(ex.Message)
623.         Finally
624.             Mysqlconn.Dispose()
625.         End Try
626.     End Sub
627.
628.     Private Sub Chart21_Click(sender As Object, e As EventArgs) Handles
Chart21.Click
629.         Mysqlconn = New MySqlConnection
630.         Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
631.         Dim READER As MySqlDataReader
632.
633.         Try
634.             Mysqlconn.Open()
635.             Dim Query As String
636.             Query = "SELECT months, count(*) as 'days'
637.                     FROM year_2020
638.                     WHERE pestname=''" & ComboBox1.SelectedItem & "''
639.                         AND years=" & ComboBox2.SelectedItem & "
640.                             GROUP BY months
641.                             LIMIT 12 ;"
642.             COMMAND = New MySqlCommand(Query, Mysqlconn)
643.             READER = COMMAND.ExecuteReader
644.             While READER.Read
645.                 Chart21.Series("Root
Aphid").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
646.             End While
647.             Mysqlconn.Close()
648.             Catch ex As MySqlException
649.                 MessageBox.Show(ex.Message)
650.             Finally
651.                 Mysqlconn.Dispose()
652.             End Try
653.         End Sub
654.
655.     Private Sub Chart22_Click(sender As Object, e As EventArgs) Handles
Chart22.Click
656.         Mysqlconn = New MySqlConnection
657.         Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
658.         Dim READER As MySqlDataReader
659.
660.         Try
661.             Mysqlconn.Open()
662.             Dim Query As String
663.             Query = "SELECT months, count(*) as 'days'
664.                     FROM year_2020
665.                     WHERE pestname=''" & ComboBox1.SelectedItem & "''
666.                         AND years=" & ComboBox2.SelectedItem & "
667.                             GROUP BY months
668.                             LIMIT 12 ;"
669.             COMMAND = New MySqlCommand(Query, Mysqlconn)
670.             READER = COMMAND.ExecuteReader
671.             While READER.Read
672.                 Chart22.Series("Root Grub
").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
673.             End While

```

```

674.         Mysqlconn.Close()
675.     Catch ex As MySqlException
676.         MessageBox.Show(ex.Message)
677.     Finally
678.         Mysqlconn.Dispose()
679.     End Try
680. End Sub
681.
682. Private Sub Chart23_Click(sender As Object, e As EventArgs) Handles
Chart23.Click
683.     Mysqlconn = New MySqlConnection
684.     Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
685.     Dim READER As MySqlDataReader
686.
687.     Try
688.         Mysqlconn.Open()
689.         Dim Query As String
690.         Query = "SELECT months, count(*) as 'days'
FROM year_2020
WHERE pestname=' " & ComboBox1.SelectedItem & "'"
691.             AND years=" & ComboBox2.SelectedItem & "
692.             GROUP BY months
693.             LIMIT 12 ;"
694.         COMMAND = New MySqlCommand(Query, Mysqlconn)
695.         READER = COMMAND.ExecuteReader
696.         While READER.Read
697.             Chart23.Series("Stem
Borer").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
698.         End While
699.     Catch ex As MySqlException
700.         MessageBox.Show(ex.Message)
701.     Finally
702.         Mysqlconn.Dispose()
703.     End Try
704. End Sub
705.
706.
707.
708.
709. Private Sub Chart24_Click(sender As Object, e As EventArgs) Handles
Chart24.Click
710.     Mysqlconn = New MySqlConnection
711.     Mysqlconn.ConnectionString =
"server=localhost;userid=root;password=Najib;database=database"
712.     Dim READER As MySqlDataReader
713.
714.     Try
715.         Mysqlconn.Open()
716.         Dim Query As String
717.         Query = "SELECT months, count(*) as 'days'
FROM year_2020
WHERE pestname=' " & ComboBox1.SelectedItem & "'"
718.             AND years=" & ComboBox2.SelectedItem & "
719.             GROUP BY months
720.             LIMIT 12 ;"
721.         COMMAND = New MySqlCommand(Query, Mysqlconn)
722.         READER = COMMAND.ExecuteReader
723.         While READER.Read

```

```
726.             Chart24.Series("Zigzag
    Leafhopper").Points.AddXY(READER.GetString("months"), READER.GetString("days"))
727.         End While
728.     Mysqlconn.Close()
729.     Catch ex As MySqlException
730.         MessageBox.Show(ex.Message)
731.     Finally
732.         Mysqlconn.Dispose()
733.     End Try
734. End Sub
735.
736. Private Sub Button5_Click(sender As Object, e As EventArgs)
737.
738. End Sub
739. End Class
```

VI. Library 1

```
1. Imports System.IO
2.
3. Public Class Library1
4.     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
    Button1.Click
5.         Me.Close()
6.         Home.Show()
7.
8.     End Sub
9.
10.    Private Sub Button2_Click(sender As Object, e As EventArgs) Handles
    Button2.Click
11.        Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/black-bug")
12.    End Sub
13.
14.    Private Sub Button3_Click(sender As Object, e As EventArgs) Handles
    Button3.Click
15.        Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/zigzag-leafhopper")
16.
17.
18.    End Sub
19.
20.    Private Sub Button4_Click(sender As Object, e As EventArgs) Handles
    Button4.Click
21.
22.        Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/rice-skippers")
23.    End Sub
24.
25.    Private Sub Button14_Click(sender As Object, e As EventArgs) Handles
    Button14.Click
26.        Me.Hide()
27.        Library2.Show()
28.
29.    End Sub
30.
31.    Private Sub Button7_Click(sender As Object, e As EventArgs) Handles
    Button7.Click
32.        Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/rice-thrips")
33.
34.    End Sub
35.
36.    Private Sub Button6_Click(sender As Object, e As EventArgs) Handles
    Button6.Click
37.        Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/rice-whorl-maggot")
38.    End Sub
39.
40.    Private Sub Button5_Click(sender As Object, e As EventArgs) Handles
    Button5.Click
```

```
41.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/mealy-bugs")
42.    End Sub
43.
44.    Private Sub Button10_Click(sender As Object, e As EventArgs) Handles
        Button10.Click
45.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/mole-cricket")
46.    End Sub
47.
48.    Private Sub Button9_Click(sender As Object, e As EventArgs) Handles
        Button9.Click
49.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/ants")
50.    End Sub
51.
52.    Private Sub Button8_Click(sender As Object, e As EventArgs) Handles
        Button8.Click
53.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/armyworms")
54.    End Sub
55.
56.    Private Sub Button13_Click(sender As Object, e As EventArgs) Handles
        Button13.Click
57.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/green-semiloopers")
58.    End Sub
59.
60.    Private Sub Button12_Click(sender As Object, e As EventArgs) Handles
        Button12.Click
61.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/greenhorned-caterpillar")
62.    End Sub
63.
64.    Private Sub Button11_Click(sender As Object, e As EventArgs) Handles
        Button11.Click
65.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
        sheets/pest-management/insects/item/rice-bug")
66.    End Sub
67.
68.    Private Sub Library1_Load(sender As Object, e As EventArgs) Handles
        MyBase.Load
69.
70.    End Sub
71. End Class
```

VII. Library 2

```
1. Public Class Library2
2.     Private Sub Button2_Click(sender As Object, e As EventArgs) Handles
3.         Button2.Click
4.             Process.Start("http://www.knowledgebank.irri.org/training/fact-
5.             sheets/pest-management/insects/item/planthopper")
6.         End Sub
7.
8.     Private Sub Button3_Click(sender As Object, e As EventArgs) Handles
9.         Button3.Click
10.            Process.Start("http://www.knowledgebank.irri.org/training/fact-
11.            sheets/pest-management/insects/item/field-crickets")
12.        End Sub
13.
14.    Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
15.        Button1.Click
16.            Me.Close()
17.            Library1.Show()
18.
19.
20.    End Sub
21.
22.    Private Sub Button14_Click(sender As Object, e As EventArgs) Handles
23.        Button14.Click
24.            Me.Hide()
25.            Home.Show()
26.
27.    End Sub
28.
29.    Private Sub Button4_Click(sender As Object, e As EventArgs) Handles
30.        Button4.Click
31.            Process.Start("http://www.knowledgebank.irri.org/training/fact-
32.            sheets/pest-management/insects/item/cutworms")
33.        End Sub
34.
35.    Private Sub Button7_Click(sender As Object, e As EventArgs) Handles
36.        Button7.Click
37.            Process.Start("http://www.knowledgebank.irri.org/training/fact-
38.            sheets/pest-management/insects/item/green-leafhopper")
39.        End Sub
40.
41.    Private Sub Button6_Click(sender As Object, e As EventArgs) Handles
42.        Button6.Click
43.            Process.Start("http://www.knowledgebank.irri.org/training/fact-
44.            sheets/pest-management/insects/item/rice-caseworm")
45.        End Sub
46.
47.    Private Sub Button5_Click(sender As Object, e As EventArgs) Handles
48.        Button5.Click
49.            Process.Start("http://www.knowledgebank.irri.org/training/fact-
50.            sheets/pest-management/insects/item/short-horned-grasshopper")
51.        End Sub
52.
53.    Private Sub Button10_Click(sender As Object, e As EventArgs) Handles
54.        Button10.Click
```

```
39.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/rice-gall-midge")
40.  End Sub
41.
42.  Private Sub Button9_Click(sender As Object, e As EventArgs) Handles
    Button9.Click
43.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/rice-hispa")
44.  End Sub
45.
46.  Private Sub Button8_Click(sender As Object, e As EventArgs) Handles
    Button8.Click
47.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/stem-borer")
48.  End Sub
49.
50.  Private Sub Button11_Click(sender As Object, e As EventArgs) Handles
    Button11.Click
51.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/rice-leaffolder")
52.  End Sub
53.
54.  Private Sub Button12_Click(sender As Object, e As EventArgs) Handles
    Button12.Click
55.      Process.Start("http://www.knowledgebank.irri.org/training/fact-
    sheets/pest-management/insects/item/root-aphids")
56.  End Sub
57.
58.  Private Sub Button13_Click(sender As Object, e As EventArgs) Handles
    Button13.Click
59.      Process.Start("http://www.knowledgebank.irri.org/decision-tools/rice-
    doctor/rice-doctor-fact-sheets/item/roots-grubs")
60.  End Sub
61.
62.  Private Sub Library2_Load(sender As Object, e As EventArgs) Handles
    MyBase.Load
63.
64.  End Sub
65. End Class
```

VIII. Login

```
1. Public Class Login
2.
3.     Private Sub OK_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles OK.Click
4.         If UsernameTextBox.Text = "admin" And PasswordTextBox.Text = "12345"
    Then
5.             MessageBox.Show("Login Success")
6.             Me.Hide()
7.             AppsInfo.Show()
8.         Else
9.             MessageBox.Show("please check Username or Password")
10.
11.        End If
12.
13.    End Sub
14.
15.    Private Sub Cancel_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Cancel.Click
16.        Me.Close()
17.    End Sub
18.
19.    Private Sub UsernameTextBox_TextChanged(sender As Object, e As EventArgs)
Handles UsernameTextBox.TextChanged
20.
21.    End Sub
22.
23.    Private Sub Login_Load(sender As Object, e As EventArgs) Handles
 MyBase.Load
24.
25.    End Sub
26. End Class
```

IX. Monitoring

```
1. Public Class Monitoring
2.     Private Sub Timer1_Tick(sender As Object, e As EventArgs) Handles
    Timer1.Tick
3.         Label1.Text = Date.Now.ToString("dd MMM yyyy    HH:mm:ss")
4.
5.
6.     End Sub
7.
8.     Private Sub Button1_Click(sender As Object, e As EventArgs) Handles
    Button1.Click
9.         Alert.Show()
10.    End Sub
11.
12.    Private Sub Button2_Click(sender As Object, e As EventArgs) Handles
    Button2.Click
13.        Me.Close()
14.        Home.Show()
15.    End Sub
16.
17.
18.    Private Sub Monitoring_Load(sender As Object, e As EventArgs) Handles
    MyBase.Load
19.
20.        Timer1.Enabled = True
21.    End Sub
22.
23.
24.
25.
26.    Private Sub Monitoring_MouseDown(sender As Object, e As MouseEventArgs)
    Handles Me.MouseDown
27.        If e.Button = MouseButtons.Left Then
28.
29.            Alert.Show()
30.
31.        End If
32.    End Sub
33.
34.
35. End Class
```